

SAFARI 2000 MAS Flight 00149

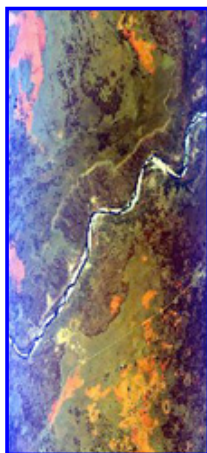
The SAFARI 2000 MAS contains 146 GB of data. Individual HDF files may exceed the size of a CD, and are best written to DVD. You may use this automated interface to order data from selected tracks (flight segments). If you require large portions of this data, we recommend that you contact us by email or phone and make special arrangements.

Flight #00-149

RBG Images

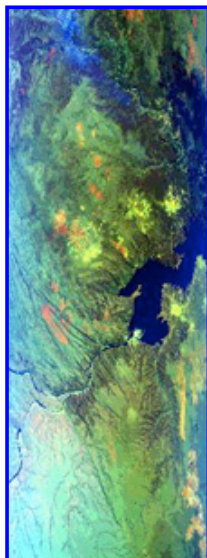
[Click Image](#)

Track #01



R: 11.01 microns
G: 2.15 microns
B: 0.46 microns

Track #03



R: 11.01 microns
G: 2.15 microns
B: 0.46 microns

Summary Information

Date: **August 22, 2000**
 ER-2 Flight Number: **00-149**
 Location: **South Africa to Mozambique**
 Principal Investigator: **Dr. Michael King (NASA GSFC)**
 Flight Scientist:
 Additional Sensors: **AirMISR, CLS, LAS, MAS, MOPITT-A, S-HIS, SSFR** (see [Instrument Status](#) below)

Processing Information

Level-1B Data processed by: **Ames Research Center**
 Level-1B Data Version: **#2**
 Level-1B Configuration: ([sample file](#))
 Calibration Type: **Final**
 Calibration Version: **1.0**

Level-1B Browse Imagery

Straight Line Flight Tracks: **13 processed**
 Scanlines Processed: **69451**
[Solar Azimuth and Zenith Angles](#)

Flight Track Map



[Click to enlarge](#)

Browse Images

Click on the Flight Track number to see track images.
 Click on the Check Box to list HDF files prior to adding to shopping cart.
 Lat/Lon ranges are for the BEG-END scanline nadir pixels.

List	Flight Track	Time_Span (GMT)	Heading (Deg)	Lat_Range (Deg_S)	Lon_Range (Deg_E)	Length (Scanlines)	Altitude (msl)
<input type="checkbox"/>	01	07:41-07:58	90	23.02-23.00	30.29-32.35	6457	18530
<input type="checkbox"/>	02	08:07-08:34	185	22.84-25.84	32.09-31.55	9892	19746
<input type="checkbox"/>	03	08:35-08:50	227	25.90-27.16	31.51-30.05	5958	20079
<input type="checkbox"/>	04	08:51-09:01	185	27.24-28.34	30.01-30.00	3568	20122
<input type="checkbox"/>	05	09:03-09:26	6	28.35-25.85	30.19-30.50	8475	20023
<input type="checkbox"/>	06	09:28-09:36	254	25.76-26.09	30.36-29.35	3213	19969
<input type="checkbox"/>	07	09:36-09:40	254	26.09-26.23	29.35-28.87	1493	19979
<input type="checkbox"/>	08	09:41-09:55	273	26.24-26.24	28.80-27.01	5311	20000
<input type="checkbox"/>	09	09:58-10:11	90	26.04-26.03	27.09-28.69	4838	19940
<input type="checkbox"/>	10	10:15-10:29	270	26.13-26.14	28.74-27.07	4967	20001
<input type="checkbox"/>	11	10:31-10:43	84	26.00-25.86	27.06-28.60	4659	20141
<input type="checkbox"/>	12	10:47-10:57	312	26.07-25.36	28.63-27.75	3580	19880
<input type="checkbox"/>	13	10:59-11:18	55	25.16-23.77	27.86-29.59	7040	19940

[All images in sequence](#)

ER-2 Flight Log

Author: [Dr. Michael King](#)
Mission Scientist: [Dr. Michael King](#)
ER-2 Pilot: [Jim Barrilleaux](#)
Takeoff: [22Aug2000 0000 UTC](#)
Landing: [22Aug2000 0000 UTC](#)
Duration: [04:30:00](#)

Objective:

The objective of this mission was to fly the ER-2 over the Limpopo River and then down the entire length of Kruger National Park from 23°S, 38°05'E to 25°50'S, 31°33'E along the descending orbit of Terra (heading of 192.8°), overflying Skukuza at the time of the Terra overpass at 0828 UTC. The ER-2 then cut across Swaziland and flew a southerly flight track over Durnacol coal mines in Kwazulu-Natal, before proceeding north and turning to overfly the Witbank coal-fired power plants of the highveld. Numerous passes of the ER-2 were made over Johannesburg so that detailed photos could be taken with the RC10 camera, followed by a single pass over Pretoria before heading back to Pietersburg.

Key Flight Legs:

The mission was coordinated with the CV-580 over Skukuza at the time of the Terra overpass, with JRA over a prescribed burn in Satara, and later with JRB over Witbank and downtown Johannesburg. The RC-10 camera was turned on for flights over the Limpopo River, Kruger National Park, Durnacol, Witbank, Johannesburg, and Pretoria.

Pilot Report:

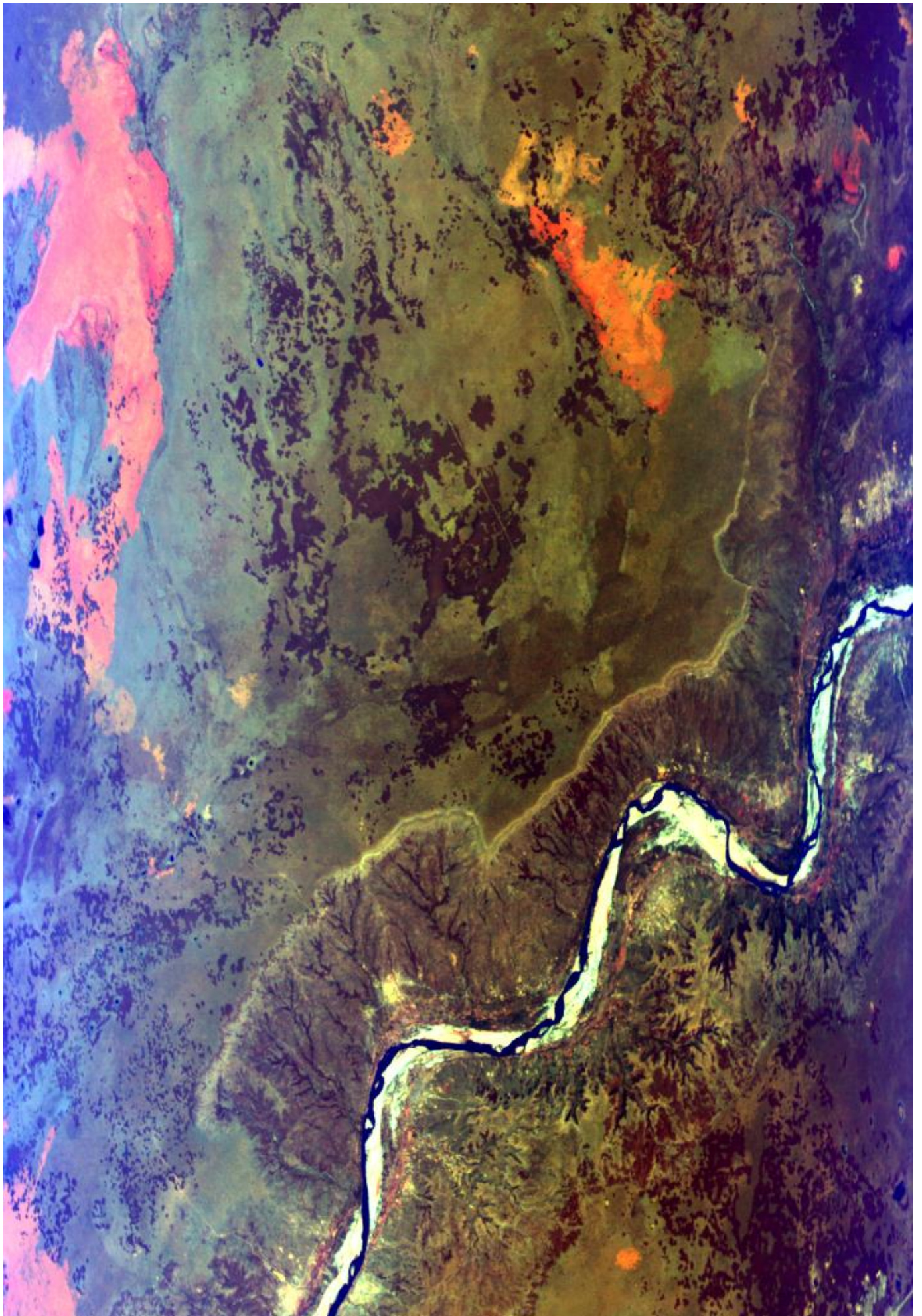
Skies were entirely devoid of cloud cover, but were exceedingly hazy north and east of Pietersburg, including the lowveld of Kruger National Park. The sky was somewhat polluted over Johannesburg, but considerably less hazy than over the lowveld to the east.

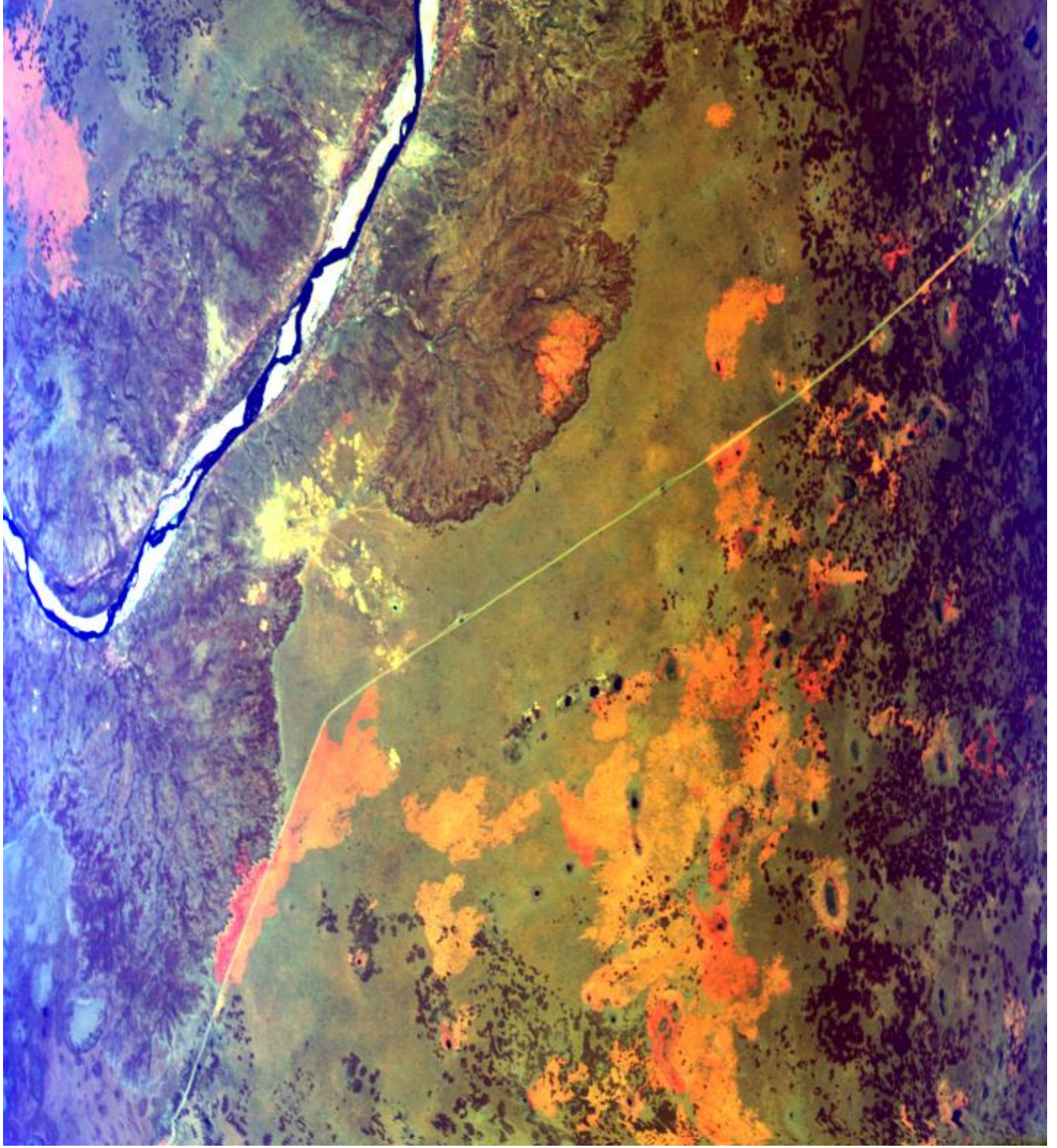
Meteorology:

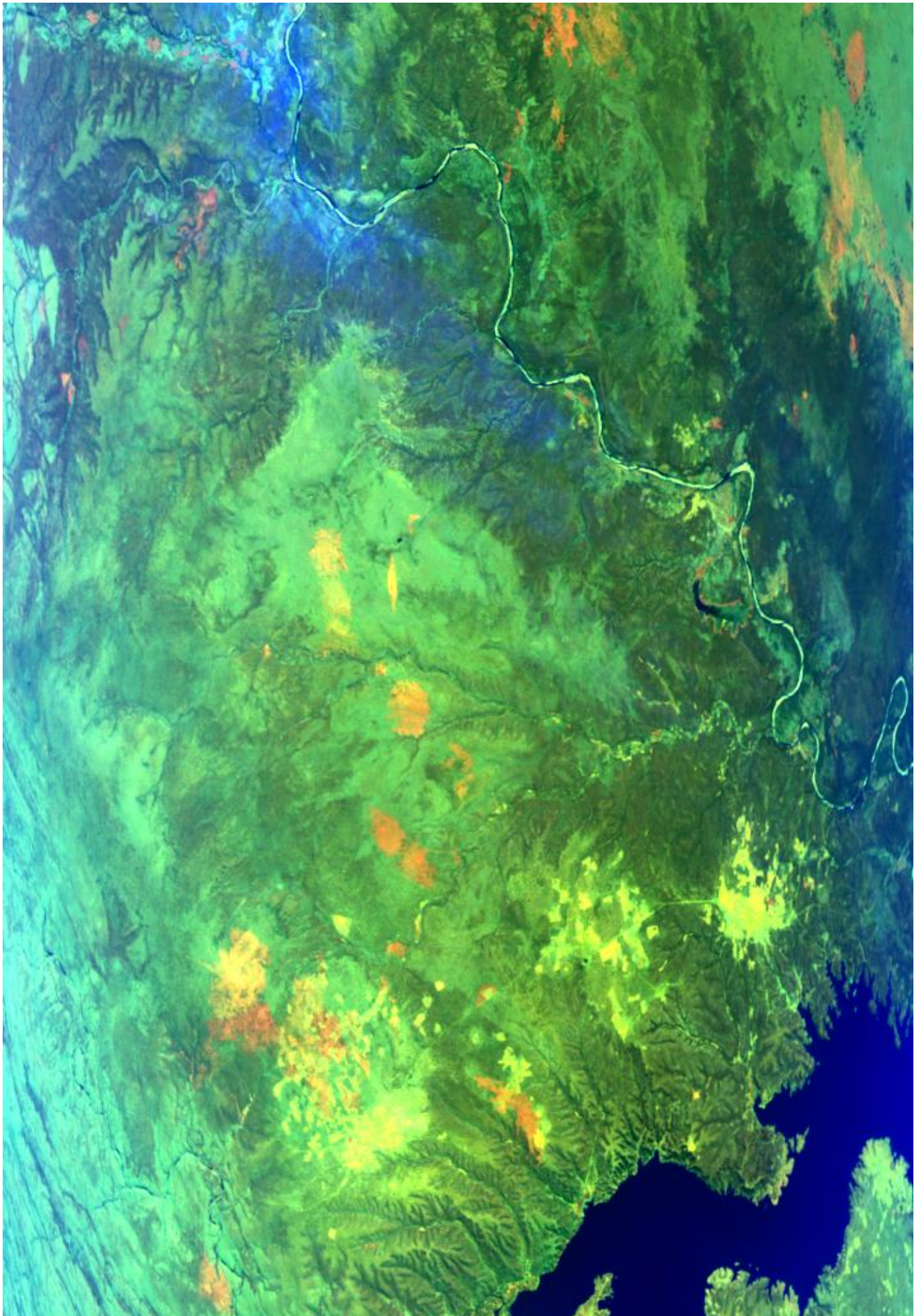
A detached cell of high pressure lay over the Northern Province, whilst the complex low pressure system to the south continued to move away from the country in a southeasterly direction. Aloft, a weak ridge lay over the northern parts of South Africa between the old trough that has weakened and moved eastwards. Fine, and generally cloud free weather over the northern and northeastern parts of South Africa with partly cloudy regions over the central and southern areas. The Congo air boundary moved into the extreme northwestern regions of Zambia and some showers and isolated thunderstorms is expected in these parts.

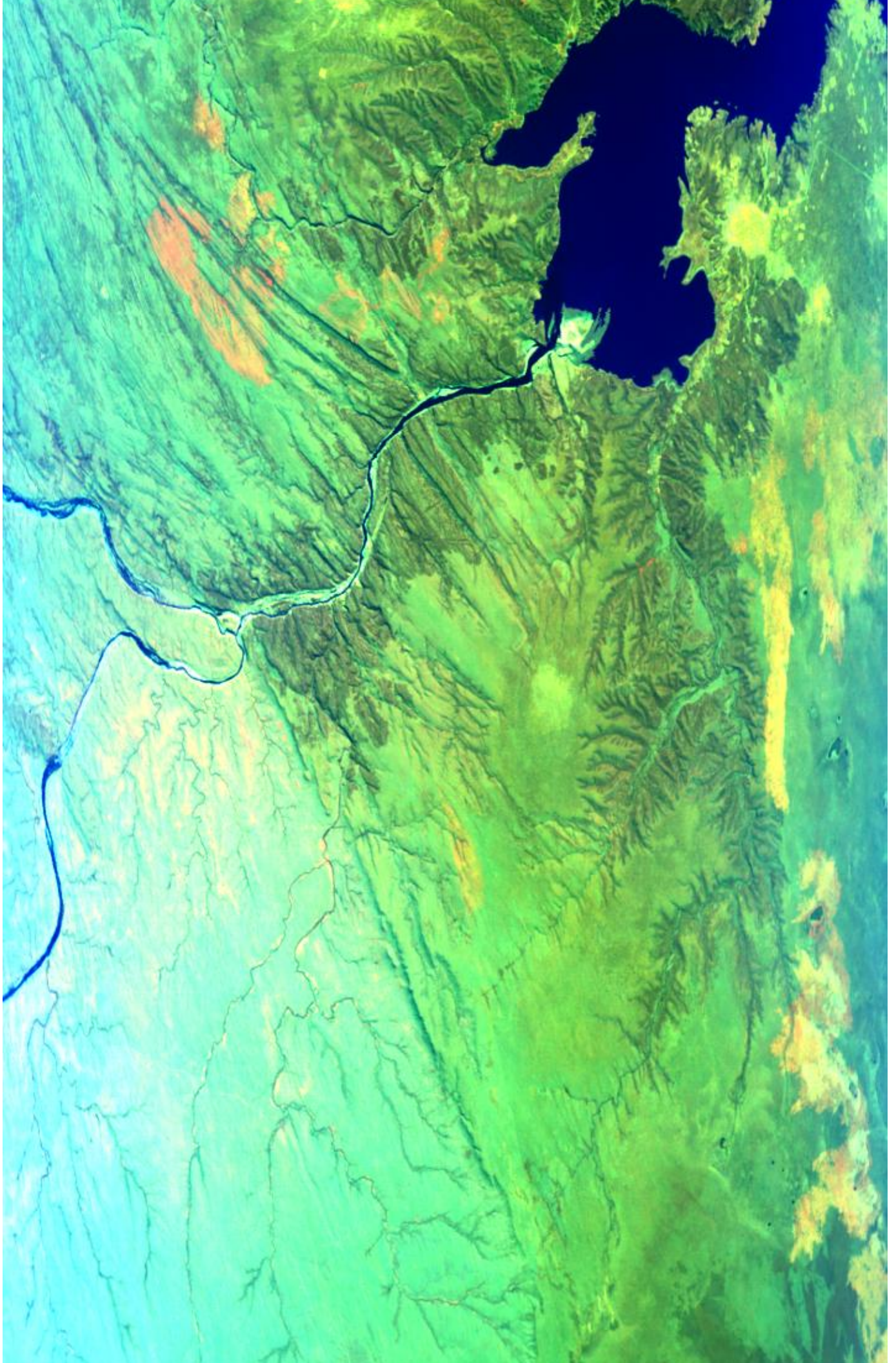
Instrument Status:

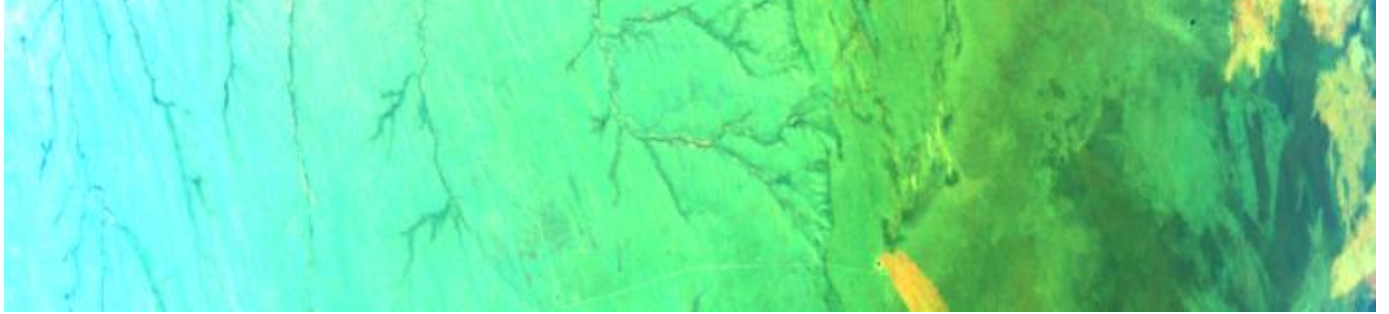
- AirMISR (Airborne Multi-angle Imaging Spectroradiometer): Not on plane; being repaired
- CLS (Cloud Lidar System): Lidar worked properly, but navigation data not recorded
- LAS (Leonardo Airborne Simulator): Failed prior to take off
- MAS (MODIS Airborne Simulator): Worked well
- MOPITT-A (MOPITT Airborne Simulator): Worked well
- S-HIS (High-resolution Interferometer Sounder): Not installed on aircraft due to instrument problem in interferometer
- SSFR (Solar Spectral Flux Radiometer): Worked well

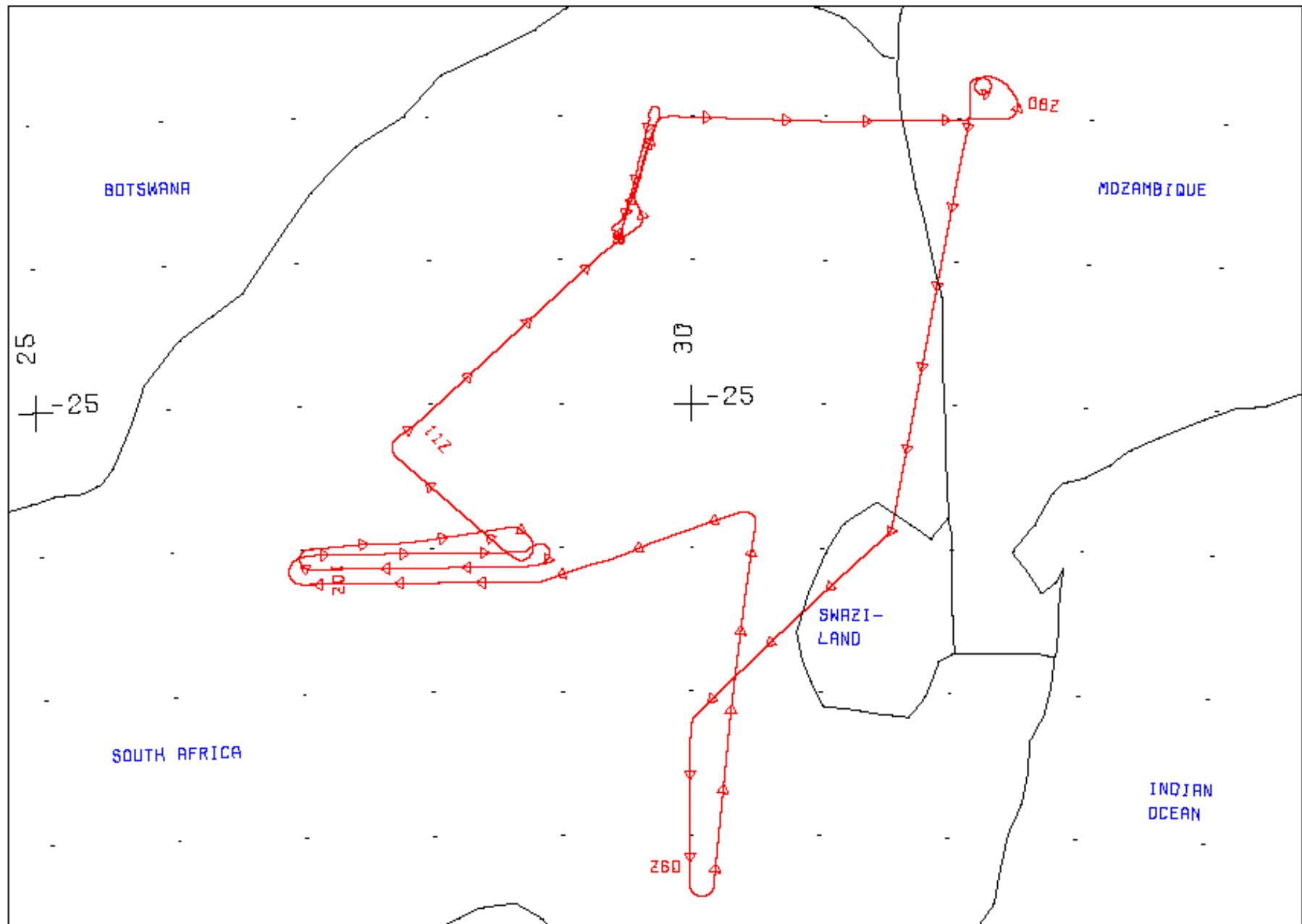












FLIGHT 00-149

22 AUGUST 2000

A/C 809

SAFARI

FLIGHT 00-149

22 AUGUST 2000

R/C 809

SAFARI

Z60



50 MAS Configuration for 00-149 22 Aug 2000 S. Africa and Mozambique

01	01	16	0	0.035165	0.0000	0.452	0.472	0.493	0.100	1981.92
02	02	16	0	0.038051	0.0000	0.534	0.554	0.577	0.100	1857.88
03	03	16	0	0.026087	0.0000	0.635	0.658	0.689	0.100	1549.55
04	04	16	0	0.030660	0.0000	0.687	0.708	0.731	0.100	1386.41
05	05	16	0	0.023379	0.0000	0.729	0.750	0.773	0.100	1260.07
06	06	16	0	0.024206	0.0000	0.810	0.830	0.855	0.100	1053.65
07	07	16	0	0.024111	0.0000	0.853	0.874	0.895	0.100	962.82
08	08	16	0	0.019328	0.0000	0.893	0.912	0.934	0.100	869.28
09	09	16	0	0.020783	0.0000	0.933	0.954	0.974	0.100	784.92
10	10	16	0	0.003346	0.0000	1.586	1.612	1.640	0.100	244.16
11	11	16	0	0.003090	0.0000	1.642	1.668	1.695	0.010	227.32
12	12	16	0	0.002844	0.0000	1.698	1.722	1.749	0.010	201.29
13	13	16	0	0.002811	0.0000	1.751	1.776	1.801	0.010	176.56
14	14	16	0	0.002897	0.0000	1.805	1.830	1.855	0.010	156.28
15	15	16	0	0.002770	0.0000	1.855	1.880	1.906	0.010	139.66
16	16	16	0	0.002634	0.0000	1.906	1.932	1.956	0.100	131.21
17	17	16	0	0.002386	0.0000	1.956	1.982	2.006	0.010	122.76
18	18	16	0	0.002335	0.0000	2.006	2.032	2.057	0.010	109.78
19	19	16	0	0.002259	0.0000	2.058	2.082	2.107	0.010	98.67
20	20	16	0	0.002299	0.0000	2.107	2.132	2.157	0.010	86.28
21	21	16	0	0.002422	0.0000	2.156	2.180	2.205	0.010	76.85
22	22	16	0	0.002637	0.0000	2.205	2.230	2.255	0.010	73.57
23	23	16	0	0.002714	0.0000	2.255	2.280	2.305	0.010	68.38
24	24	16	0	0.002559	0.0000	2.306	2.330	2.354	0.010	58.53
25	25	16	0	0.002508	0.0000	2.355	2.380	2.404	0.010	57.88
26	26	16	1	0.956000	0.0000	3.105	3.180	3.261	0.001	20.15
27	27	16	1	0.960000	0.0000	3.250	3.325	3.401	0.001	17.66
28	28	16	1	0.961000	0.0000	3.405	3.475	3.559	0.001	15.05
29	29	16	1	0.949000	0.0000	3.556	3.640	3.718	0.001	13.06
30	30	16	1	0.945000	0.0000	3.702	3.770	3.847	0.001	11.39
31	31	16	1	0.942000	0.0000	3.857	3.940	4.023	0.001	9.98
32	32	16	1	0.940000	0.0000	4.014	4.095	4.183	0.001	8.69
33	33	16	1	0.939000	0.0000	4.138	4.210	4.291	0.001	7.73
34	34	16	1	0.938000	0.0000	4.288	4.360	4.441	0.001	6.71
35	35	16	1	0.935000	0.0000	4.471	4.550	4.632	0.001	5.63
36	36	16	1	0.934000	0.0000	4.622	4.700	4.784	0.001	4.87
37	37	16	1	0.933000	0.0000	4.773	4.860	4.937	0.001	4.28

38	38	16	1	0.932000	0.0000	4.917	4.990	5.084	0.001	3.80
39	39	16	1	0.931000	0.0000	5.055	5.165	5.235	0.001	3.39
40	40	16	1	0.930000	0.0000	5.215	5.315	5.371	0.001	3.03
41	41	16	1	0.932000	0.0000	5.342	5.380	5.421	0.001	2.80
42	42	16	1	0.966000	0.0000	8.330	8.564	8.759	0.010	0.45
43	43	16	1	0.963000	0.0000	9.436	9.665	9.928	0.010	0.28
44	44	16	1	0.960000	0.0000	10.218	10.474	10.711	0.010	0.20
45	45	16	1	0.957000	0.0000	10.694	10.943	11.209	0.010	0.17
46	46	16	1	0.947000	0.0000	11.684	11.953	12.208	0.010	0.12
47	47	16	1	0.943000	0.0000	12.583	12.803	13.035	0.010	0.09
48	48	16	1	0.948000	0.0000	12.939	13.193	13.446	0.010	0.08
49	49	16	1	0.939000	0.0000	13.425	13.712	14.035	0.010	0.07
50	50	16	1	0.944000	0.0000	13.953	14.193	14.403	0.010	0.06

| | | | | | | | | | |
 | | | | | | | | | | =(!)
 | | | | | | | | | =-Scale Factor
 | | | | | | | | =- Right 50% spectral response
 | | | | | | | =-Peak 100% spectral response (microns)
 | | | | | | =-Left 50% spectral response (microns)
 | | | | | =-Calibration intercept (only used for visible bands)
 | | | | | =-----Calibration slope (only used for visible bands 1-25)
 | | | | Blackbody emmissivity (only used for IR bands 26-50)
 | | | =-----0 => visible band, 1 => thermal infrared band"
 | | =-----Number of bits in this channel (8 or 10)
 | =-----Spectral band assigned to this channel
 =----- Channel number
 (!) Sensor weighted solar spectral irradiance (Watts/meter²/micron)
 at mean Earth-Sun distance

NOTE: Factor in column 10 is used to scale radiances in
 calibrated data by the following method:
 $value_stored = int(radiance / factor)$ for each channel

Title	MODIS Airborne Simulator (MAS) Level-1B Data
Sensor_ID_Code	M5 105 MAS50
ExperimentName	SAFARI 2000
AircraftPlatform	NASA ER-2 (809)
NavFormatCode	Format (A-1)

LocationCode	Inertial (INU)
AltitudeCode	Inertial (INU)
CalibrationVersion	Version 1.0 Calibration
CalibrationName	SAFARI_Jul19-Oct19
SRF_Dataset	/rarray/calibrat/mas/srf/Oct_00/
SRF_FTP	ftp://asapdata/mas/srf/Oct_00/
NavDataSource	ER2 navigation recorder
NavDataPath	/nav/2000/er2/00-149
TbackBand	45, 47, 31, 273.0
GranuleVersion	1.0.0
MetadataVersion	1.0.0

 Conversion from counts to radiance in VIS and NIR channels is
 $rad = (count - (cbb_avg)) * slope$

"where,"

rad = radiance

cbb_avg = cold black body counts (running average)

slope = from column 7 in above table

count = count value

IR Emissivity Correction (for MAS-50)

From Chris Moeller (UWisc)

This is done in 2 steps:

1. Get the (TBACK Band) scan head count and convert it to a brightness temperature
2. Use the scan head temperature and the cold and warm black body counts/temperatures for computing the corrected slope and intercept for all IR bands.

(note: set to 1.0 for channels 1-25)

MAS BB Emissivity Coefficients

Hemispherical Reflectance (JPL) 11/00

convolved with MAS SRF (ARC) 10/00

Red spot Paint

Values in form Wavelength, Emissivity

For Bands 26 thru 50:

0.95600, 0.96000, 0.96100, 0.94900, 0.94500,
0.94200, 0.94000, 0.93900, 0.93800, 0.93500,
0.93400, 0.93300, 0.93200, 0.93100, 0.93000,
0.93200, 0.96600, 0.96300, 0.96000, 0.95700,
0.94700, 0.94300, 0.94800, 0.93900, 0.94400,

Config.asc creation date = 13-June-2001

Config.asc creation date = 13-June-2001

MODIS AIRBORNE SIMULATOR (MAS) FLIGHT LINE
 INFORMATION FOR 22 Aug 2000
 NASA FLIGHT NUMBER 00-149

START OF FLIGHT LINE					END OF FLIGHT				
LINE	FLIGHT DATA								
LINE	TIME	LAT	LON	SOLAR	TIME	LAT	LON	SOLAR	TIME
	HH:MM:SS	DEG	DEG	ZEN	HH:MM:SS	DEG	DEG	ZEN	HH:MM:SS
	SCAN	HEAD	ALT	AZIM	SCAN	HEAD	ALT	AZIM	SCAN
	LINES	DEG	M (GPS)	DEG	LINES	DEG	M (GPS)	DEG	LINES
1	07:41:24	-23.016	30.288	48.8	48.5	07:58:41	-22.999	32.348	44.6
42.1	6457	89.7	18530						
2	08:07:56	-22.837	32.087	43.2	39.9	08:34:25	-25.839	31.549	42.5
30.7	9892	184.9	19746						
3	08:35:02	-25.902	31.514	42.5	30.5	08:50:59	-27.159	30.050	42.5
26.5	5958	226.8	20079						
4	08:51:48	-27.242	30.008	42.5	26.3	09:01:21	-28.337	29.999	42.6
22.6	3568	184.7	20122						
5	09:03:40	-28.346	30.190	42.4	21.5	09:26:22	-25.847	30.496	38.4
13.7	8475	5.9	20023						
6	09:28:05	-25.762	30.358	38.2	13.3	09:36:42	-26.094	29.350	38.3
11.4	3213	253.6	19969						
7	09:36:42	-26.095	29.349	38.3	11.4	09:40:42	-26.230	28.873	38.4
10.6	1493	253.9	19979						
8	09:41:17	-26.240	28.800	38.4	10.5	09:55:31	-26.237	27.008	38.1
7.7	5311	272.9	20000						
9	09:58:47	-26.038	27.087	37.8	6.3	10:11:45	-26.033	28.687	37.6
358.6	4838	89.7	19940						
10	10:15:46	-26.130	28.742	37.7	356.9	10:29:05	-26.135	27.070	37.9
354.2	4967	270.4	20001						
11	10:31:01	-25.995	27.064	37.8	353.5	10:43:30	-25.860	28.598	38.4
346.1	4659	83.6	20141						
12	10:47:25	-26.067	28.634	38.8	344.6	10:57:00	-25.364	27.748	38.5

342.1 3580 311.8 19880
 13 10:59:32 -25.160 27.864 38.5 340.9 11:18:23 -23.774 29.595 39.7
 330.9 7040 55.4 19940

NUMBER OF FILES FOR THIS FLIGHT = 13
 TOTAL NUMBER OF SCAN LINES = 69451
 DATE THESE FILES WERE PROCESSED = 30-Sep-2002
 DATE THIS LIST WAS CREATED = Tue Oct 1 10:56:24

PDT 2002

GRANULE VERSION = 2

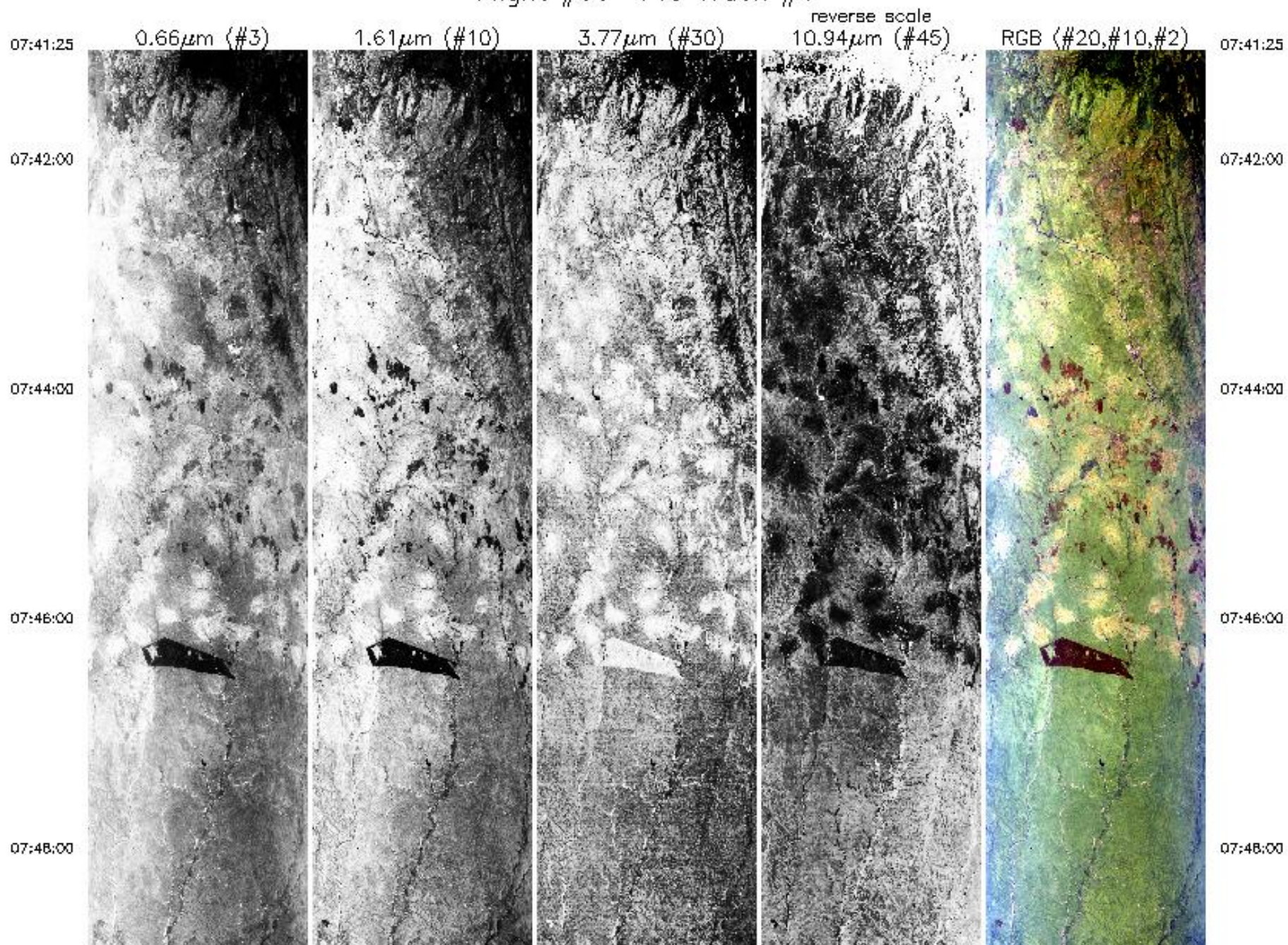
GLOBAL ATTRIBUTES

Attribute Name	Description
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CreationDate	30-Sep-2002 23:00:04
AircraftPlatform	NASA ER-2 (809)
NavFormatCode	Format (A-1)
LocationCode	Inertial (INU)
AltitudeCode	Inertial (INU)
NavDataSource	ER2 navigation recorder
NavDataPath	/nav/2000/er2/00-149
CalibrationName	SAFARI_Jul19-Oct19
Reference	NCSA HDF Reference Manual, Version 4.1r4, 2000
title	MODIS Airborne Simulator (MAS) Level-1B Data
ExperimentName	SAFARI 2000
FlightNumber	00-149
FlightDate	22 Aug 2000
SiteLineRun	void
GeographicArea	S.A., Mozambique
SRF_FTP	ftp://asapdata/mas/srf/Oct_00/
SRF_dataset	/rarray/calibrat/mas/srf/Oct_00/
FlightLineNumber	1
TotalFlightLines	13

DataUsersGuideSource	http://ltpwww.gsfc.nasa.gov/MAS/
SoftwareVersion	Level-1b Version 10.1.1 UR
CalibrationVersion	Version 1.0 Calibration
data_set	MAS SAFARI 2000
day_night_flag	D
granule_version	2
metadata_version	2.0.0
data_quality	Good
Other_Aircraft_Sensors	CLS, MOPPIT-A, SSFR, RC-10
Principal_Investigator	King
lat_UL	-23.15834
lon_UL	30.28546
lat_UR	-22.87572
lon_UR	30.29573
lat_LL	-23.16346
lon_LL	32.35697
lat_LR	-22.83656
lon_LR	32.34109
begin_date	20000821 074125
end_date	20000821 075842
RunTime	448,320 ms, or 69 ms/scanline
CompletionDate	30-Sep-2002 23:12:13
producer_granule_id	

MASL1B_00149_01_20000821_0741_0758_V02.hdf

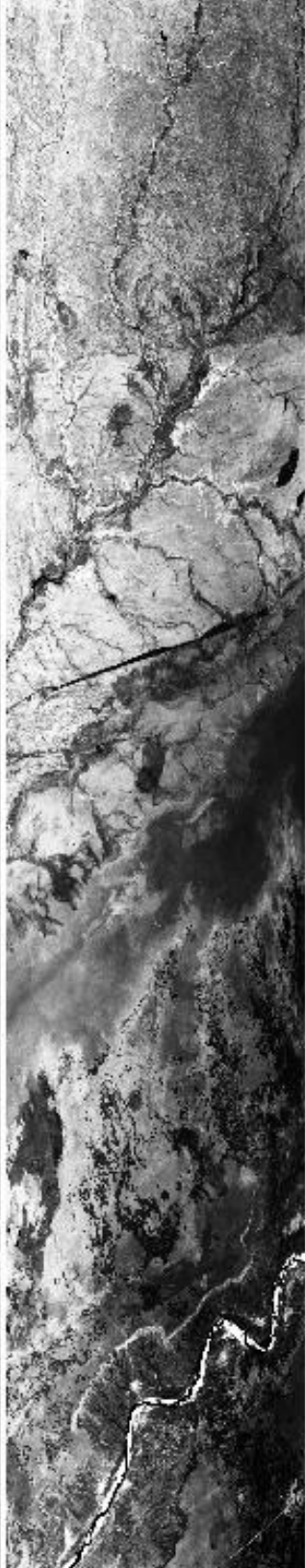
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
S.A., Mozambique
Flight #00-149 Track #1



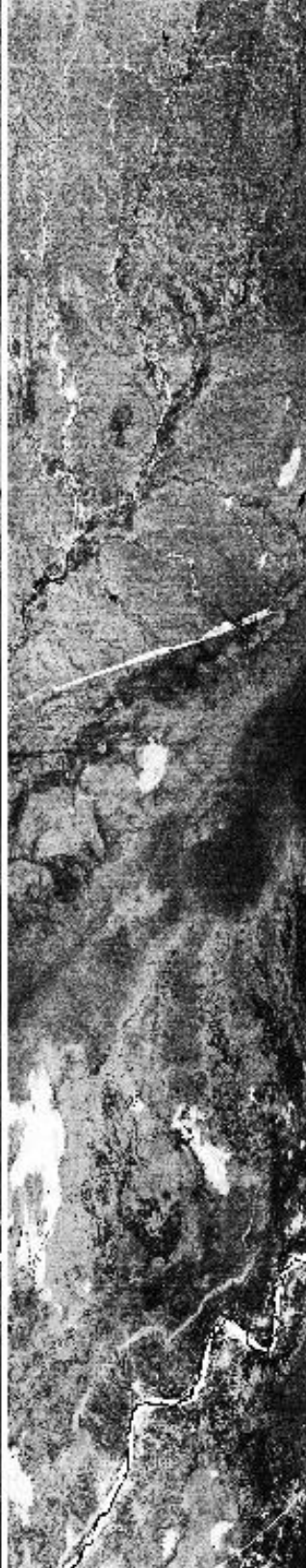
07:48:00



07:50:00



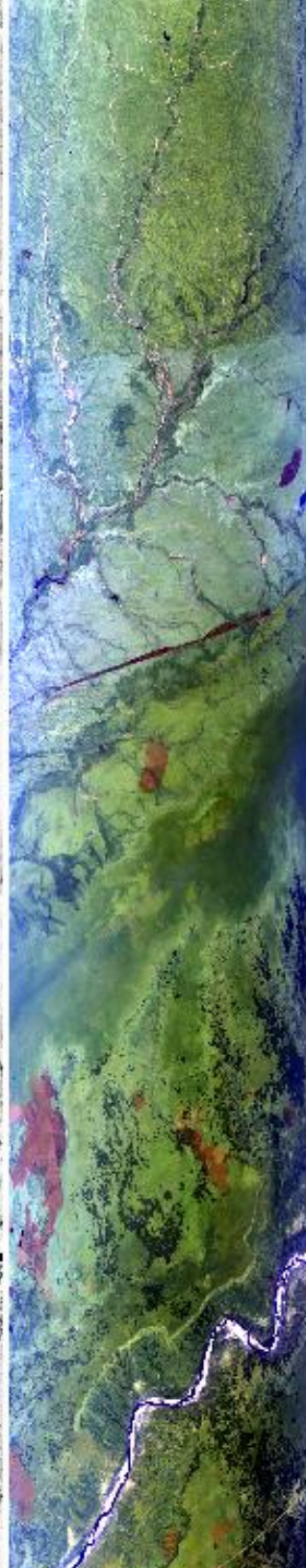
07:52:00



07:54:00



07:56:00



07:48:00

07:50:00

07:52:00

07:54:00

07:56:00

07:58:00



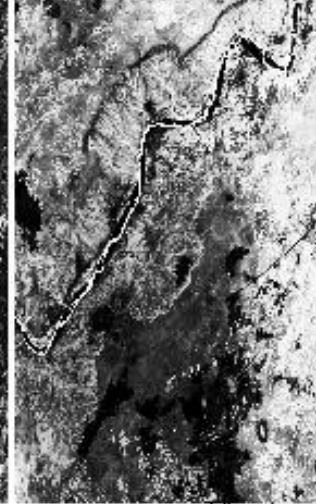
0.66 μ m (#3)



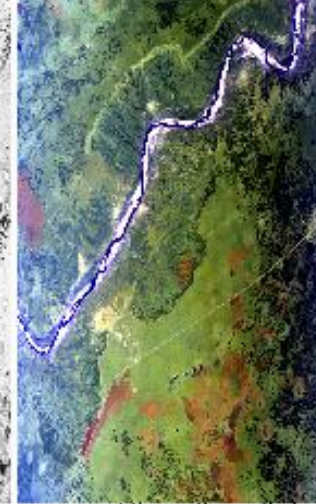
1.61 μ m (#10)



3.77 μ m (#30)



10.94 μ m (#45)
reverse scale



RGB (#20,#10,#2)

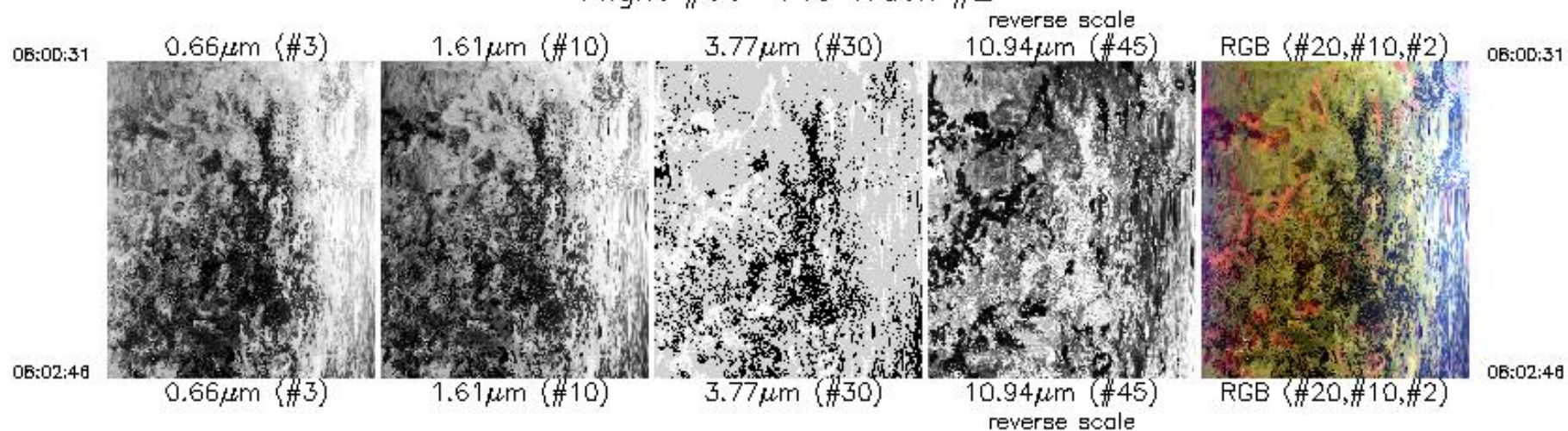
07:58:00

07:58:43

07:58:43

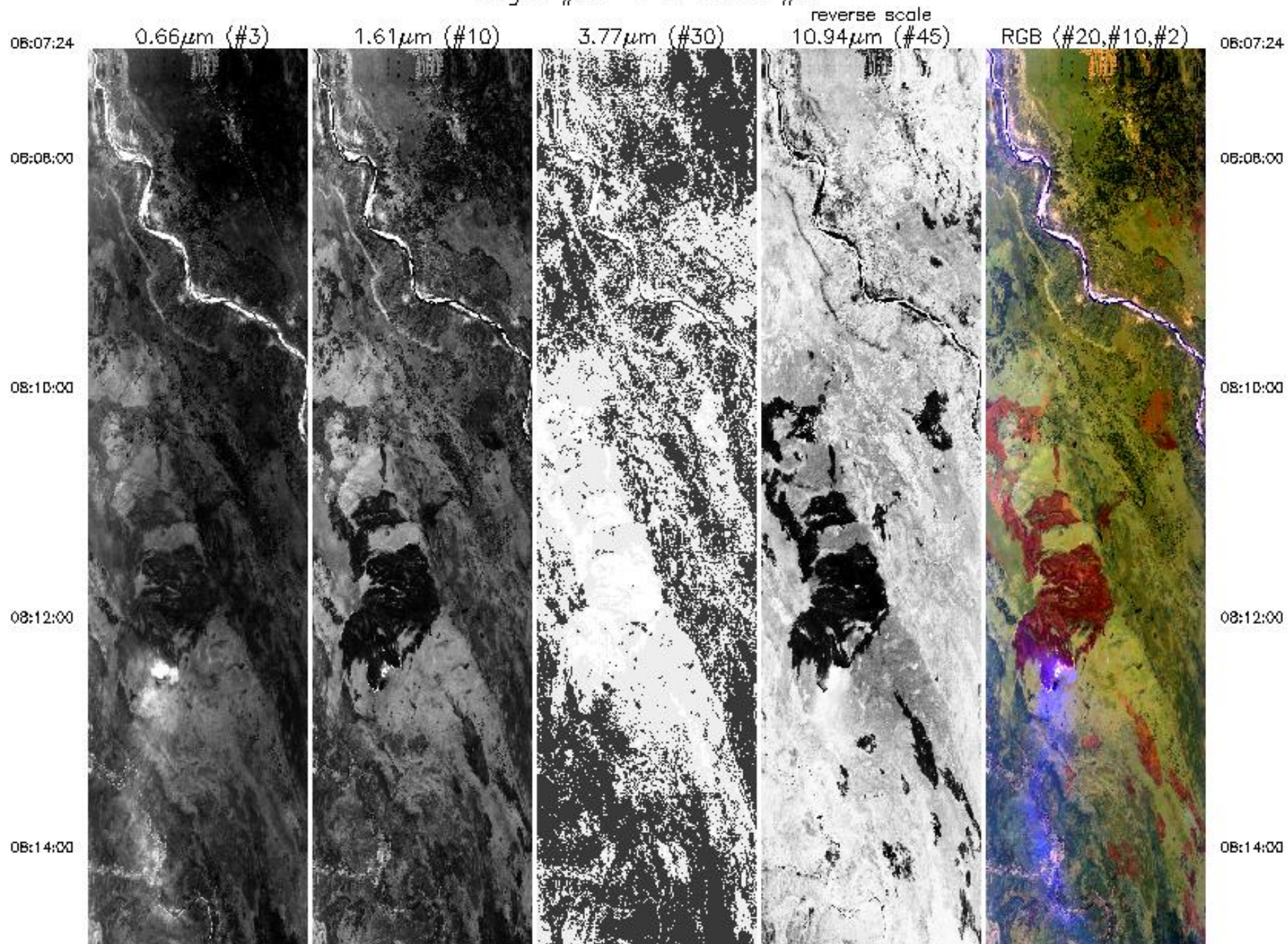
Aircraft Heading = 91.9°
Solar Zenith = 72.2°
GPS Altitude = 19066. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 22 Aug 2000
Mozabique
Flight #00-149 Track #2



Aircraft Heading = 332.6°
Solar Zenith = 67.9°
GPS Altitude = 19851. m (MSL)

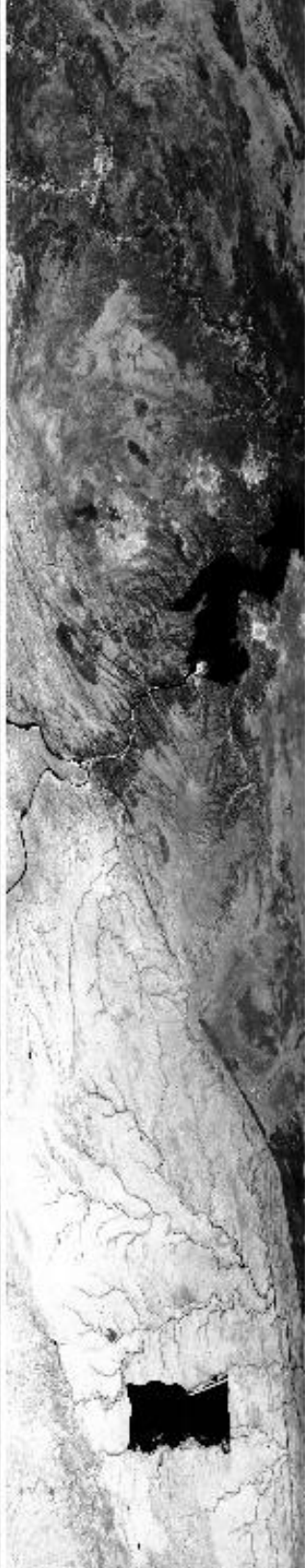
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
S.A., Mozambique
Flight #00-149 Track #3



08:14:00



08:16:00



08:18:00



08:20:00



08:22:00



08:14:00

08:16:00

08:18:00

08:20:00

08:22:00

06:22:00



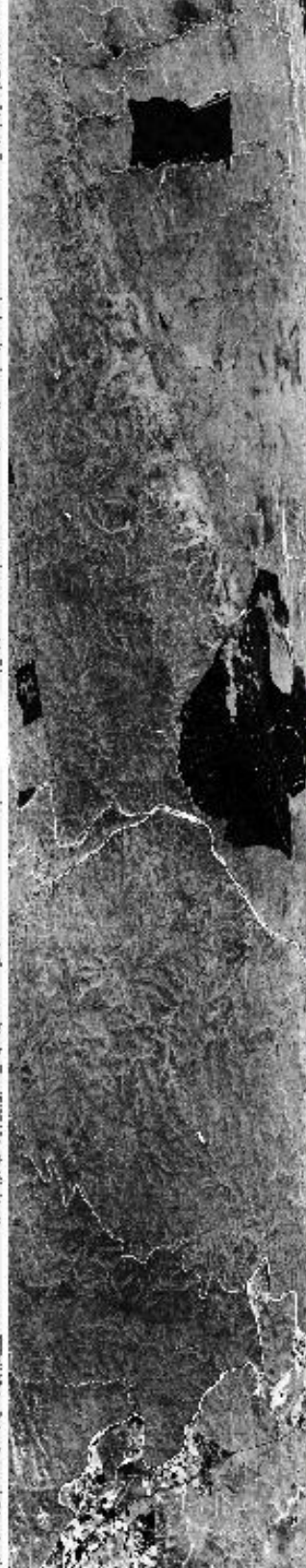
08:24:00



06:26:00



08:28:00



08:30:00



06:22:00

08:24:00

06:26:00

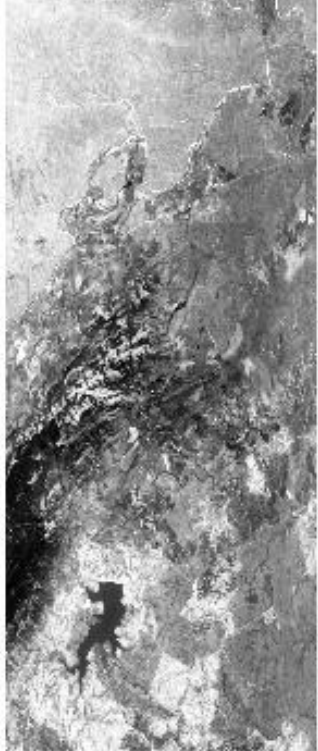
08:28:00

08:30:00

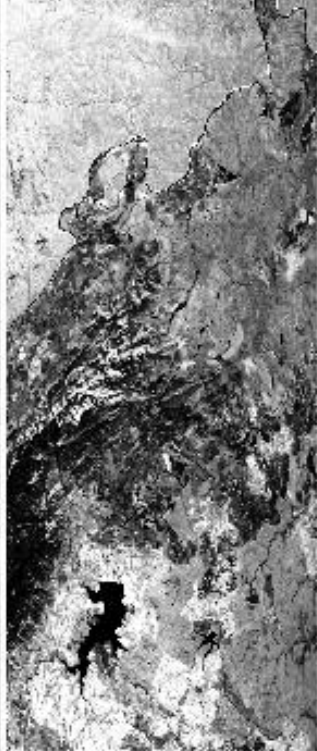
08:30:00

08:32:00

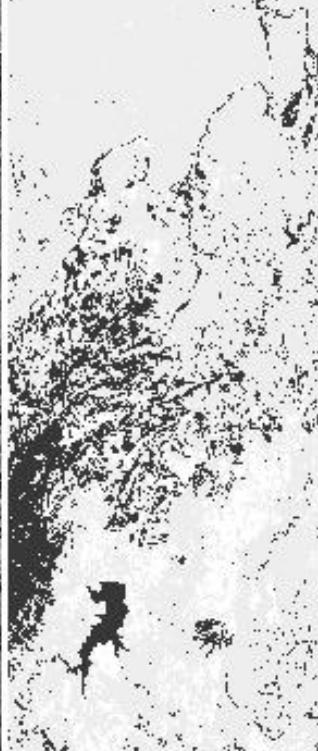
08:34:28



0.66 μ m (#3)



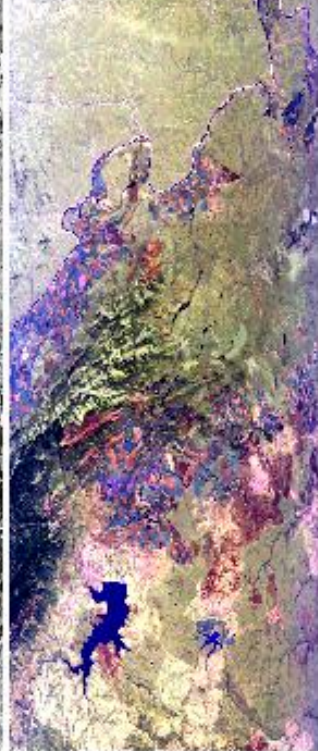
1.61 μ m (#10)



3.77 μ m (#30)



10.94 μ m (#45)
reverse scale



RGB (#20,#10,#2)

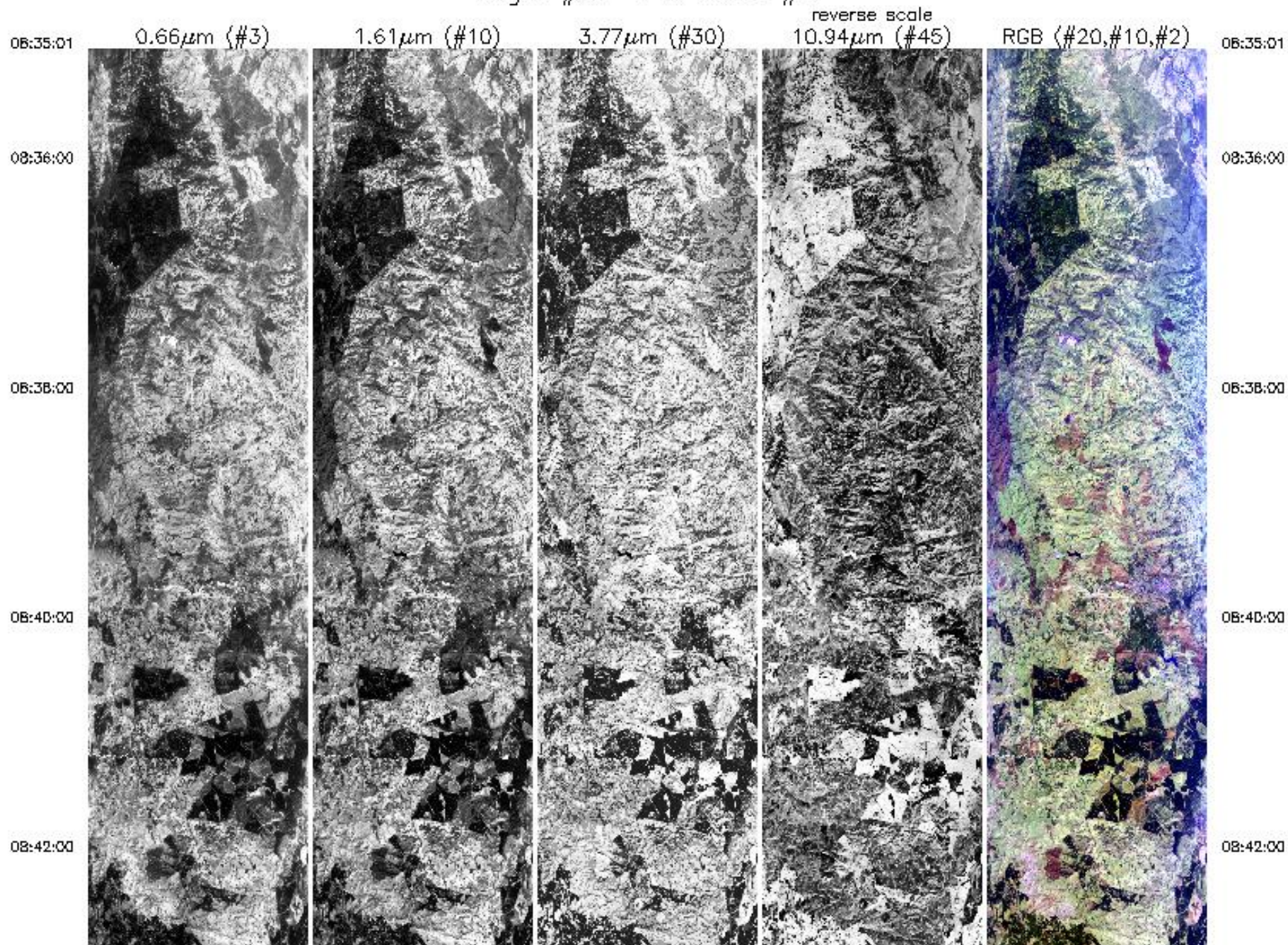
08:30:00

08:32:00

08:34:28

Aircraft Heading = 176.4°
Solar Zenith = 66.5°
GPS Altitude = 20023. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
S.A., Swaziland
Flight #00-149 Track #4



08:42:00

08:44:00

08:46:00

08:48:00

08:50:00

08:51:01



08:42:00

08:44:00

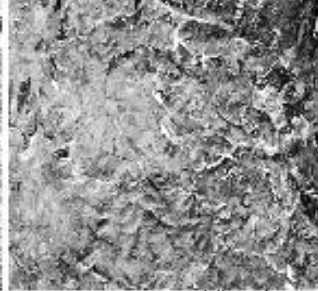
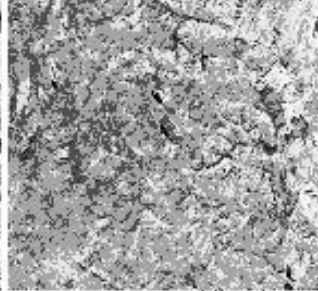
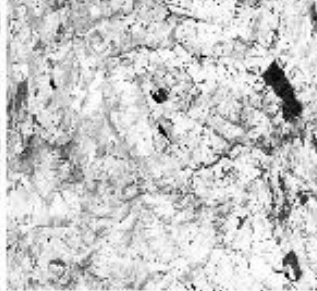
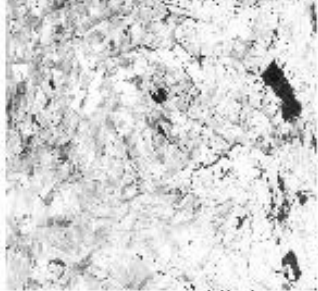
08:46:00

08:48:00

08:50:00

08:51:01

08:50:00



08:50:00

08:51:01

0.66 μ m (#3)

1.61 μ m (#10)

3.77 μ m (#30)

10.94 μ m (#45)
reverse scale

RGB (#20,#10,#2)

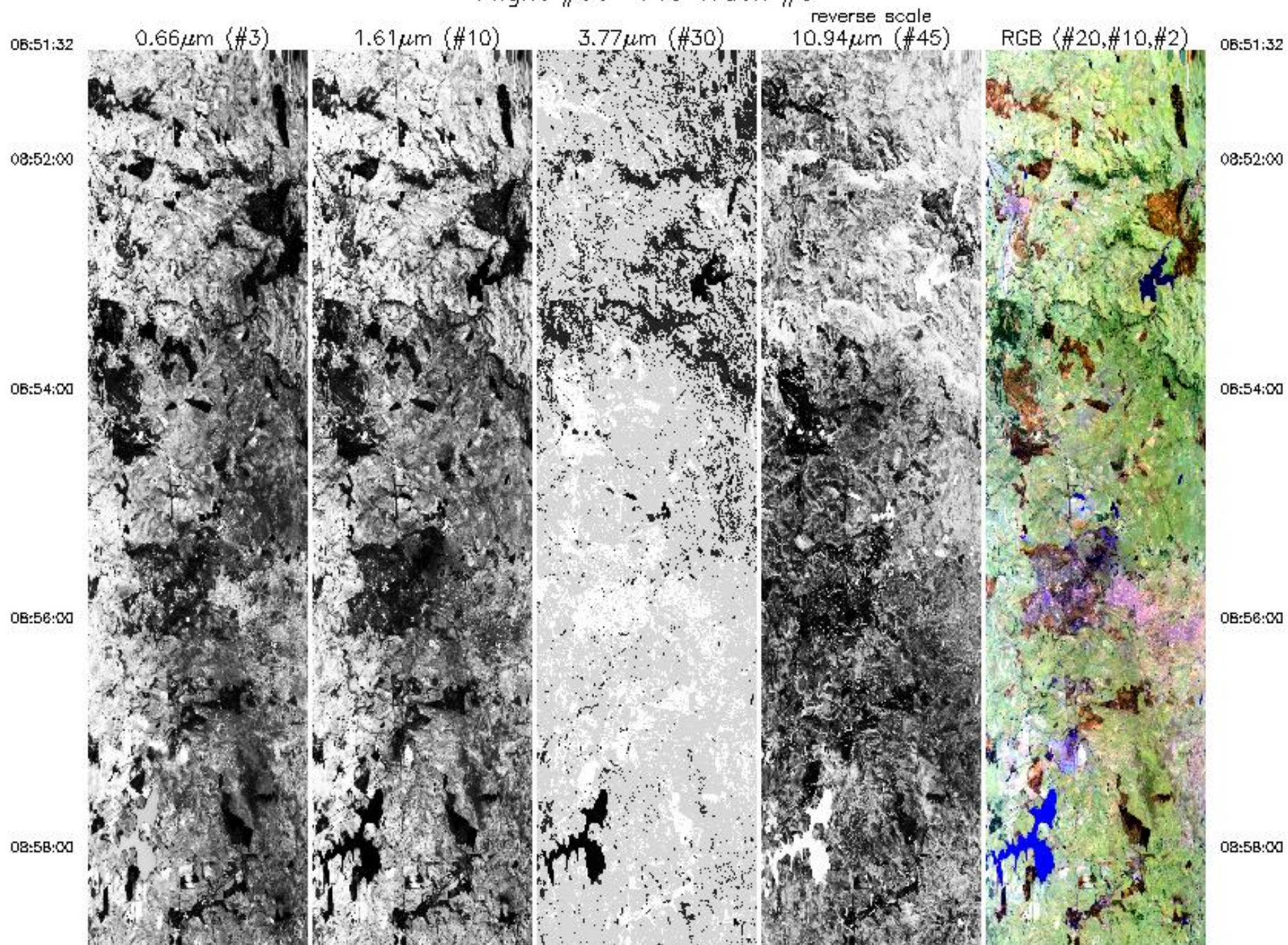
08:51:01

Aircraft Heading = 225.5°

Solar Zenith = 62.3°

GPS Altitude = 20150. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #5



08:58:00

09:00:00

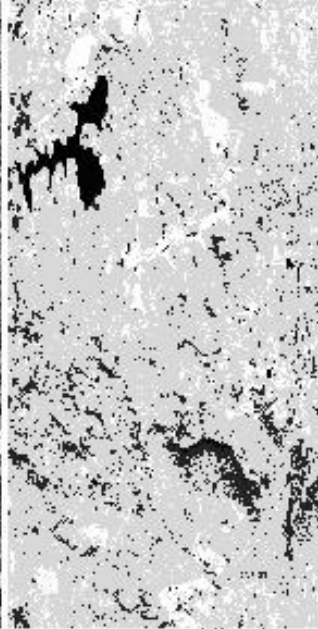
08:01:23



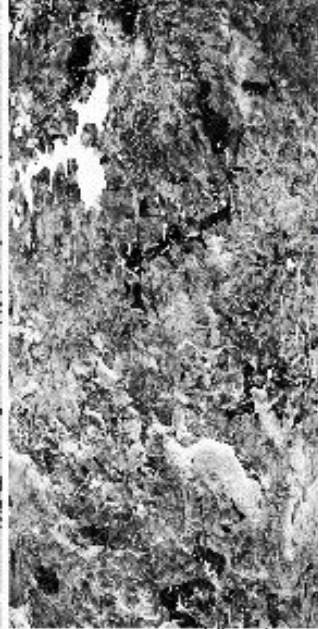
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

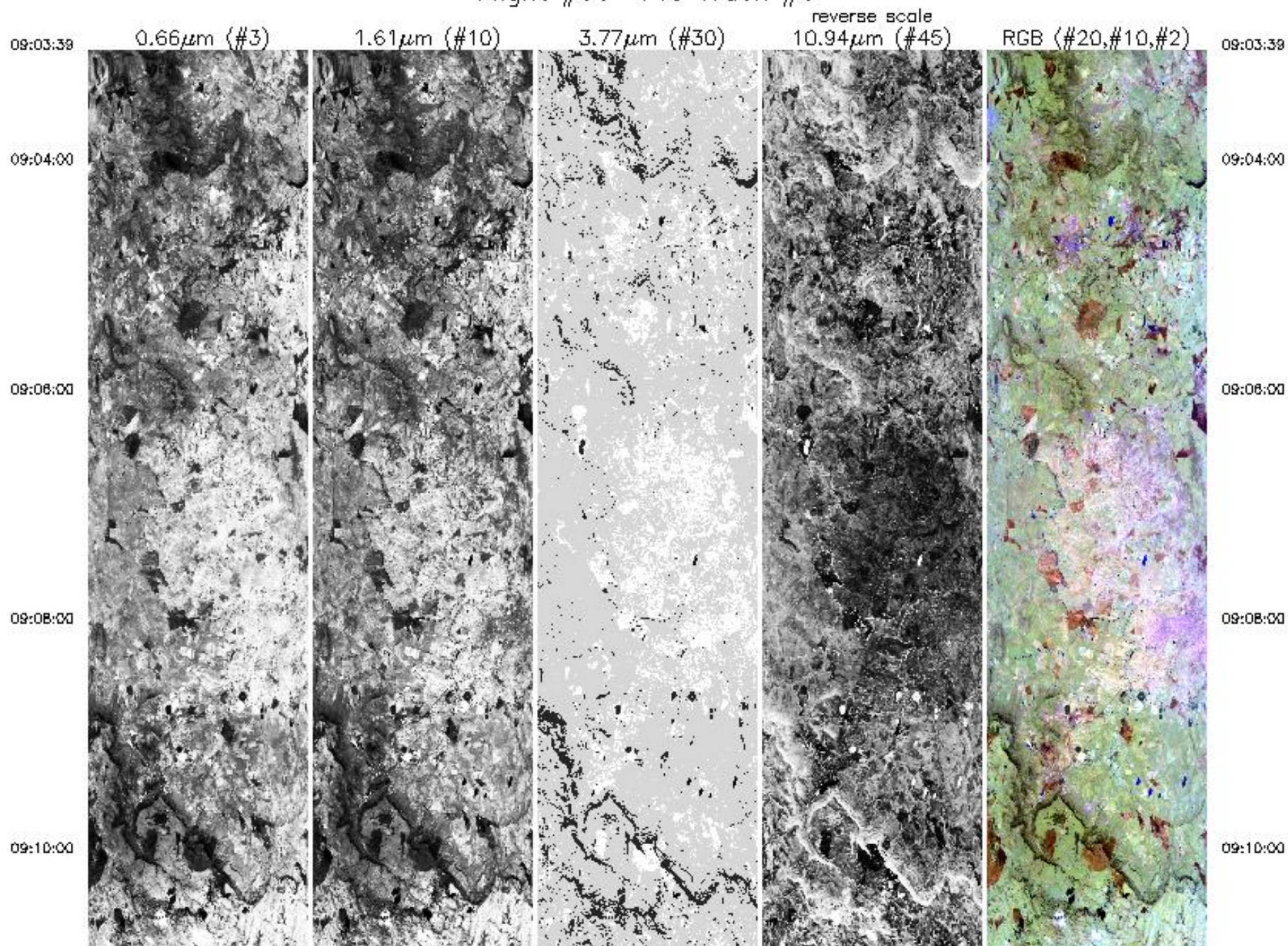
08:58:00

09:00:00

08:01:23

Aircraft Heading = 196.2°
 Solar Zenith = 59.9°
 GPS Altitude = 20079. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #6



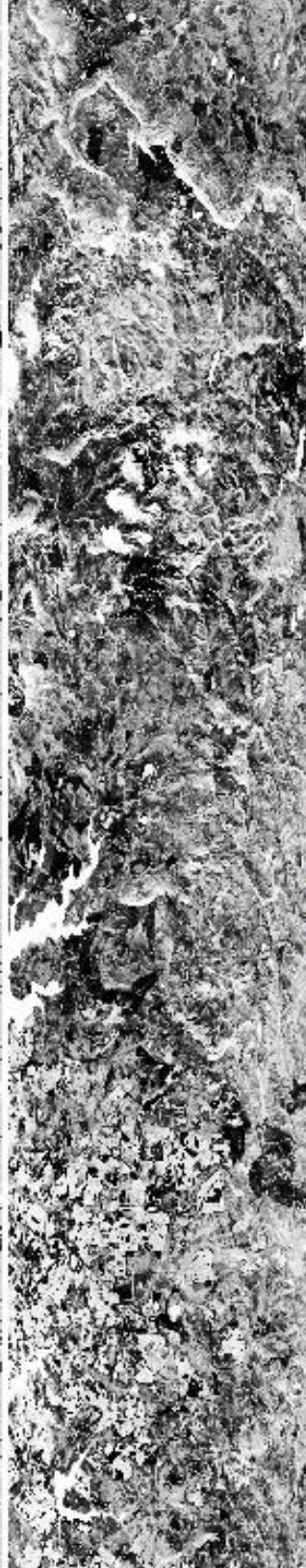
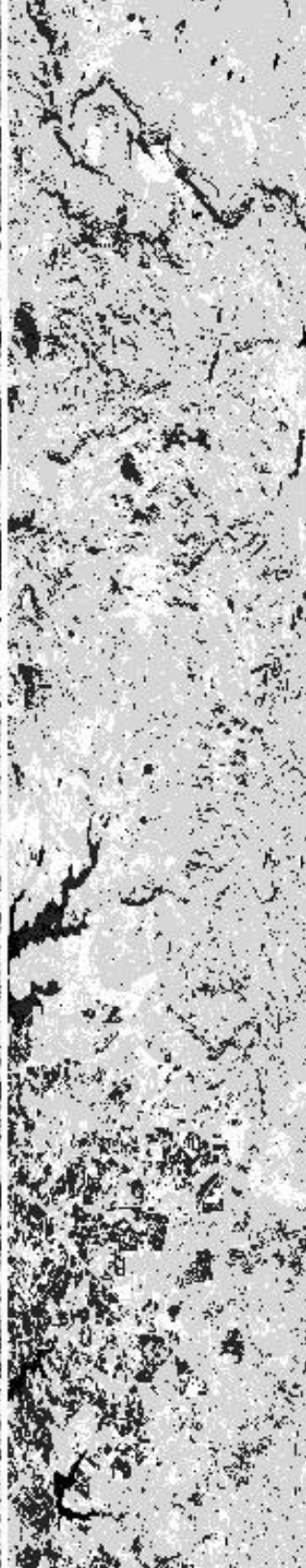
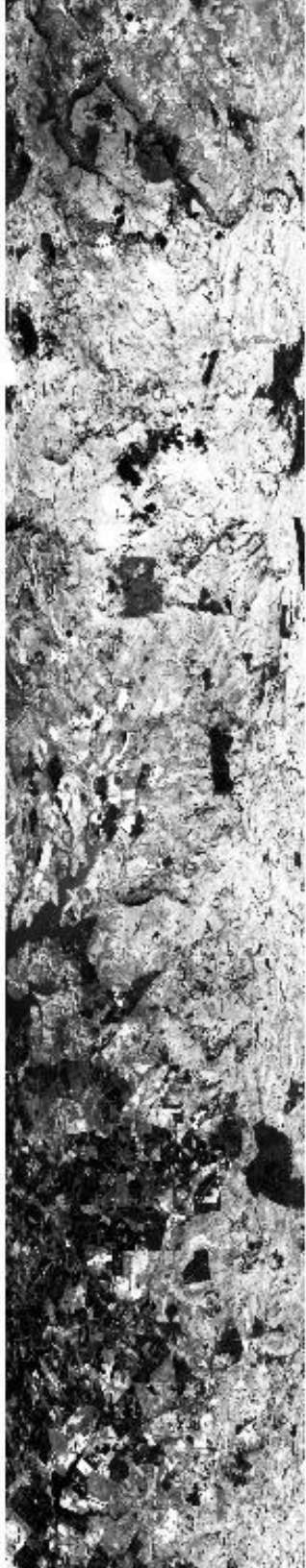
09:10:00

09:12:00

09:14:00

09:16:00

09:18:00



09:10:00

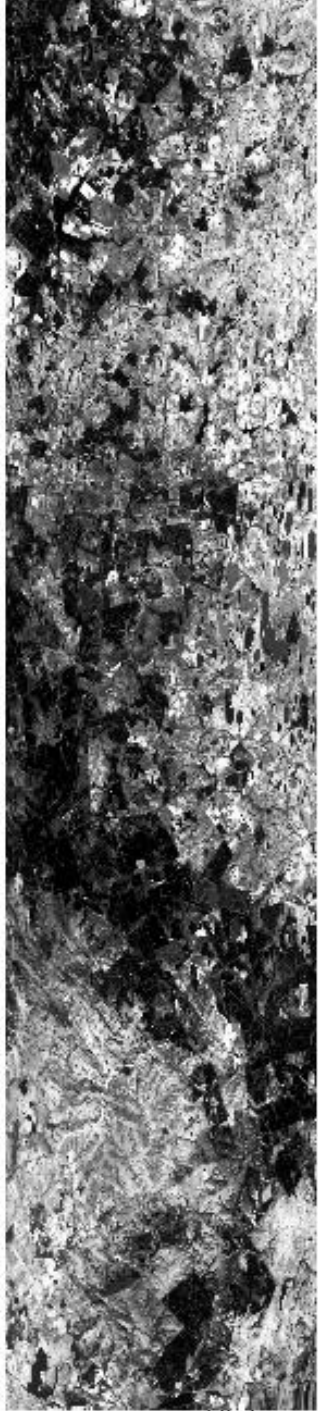
09:12:00

09:14:00

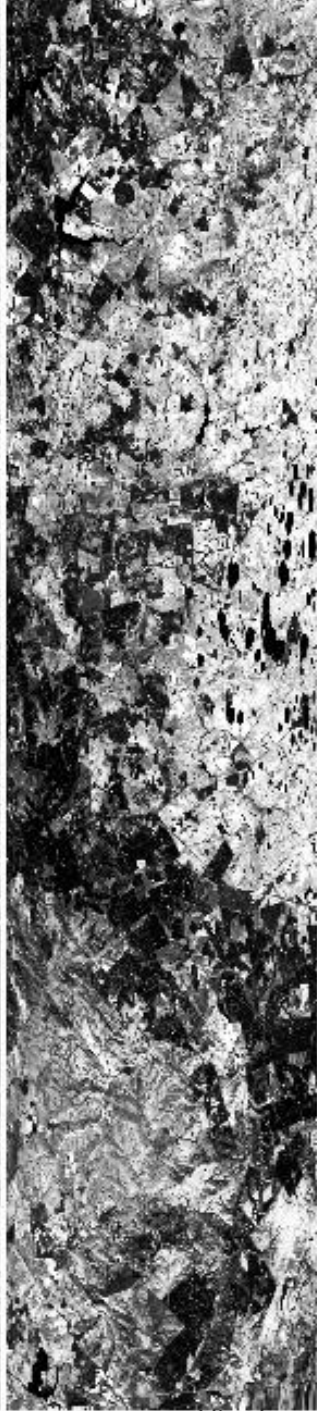
09:16:00

09:18:00

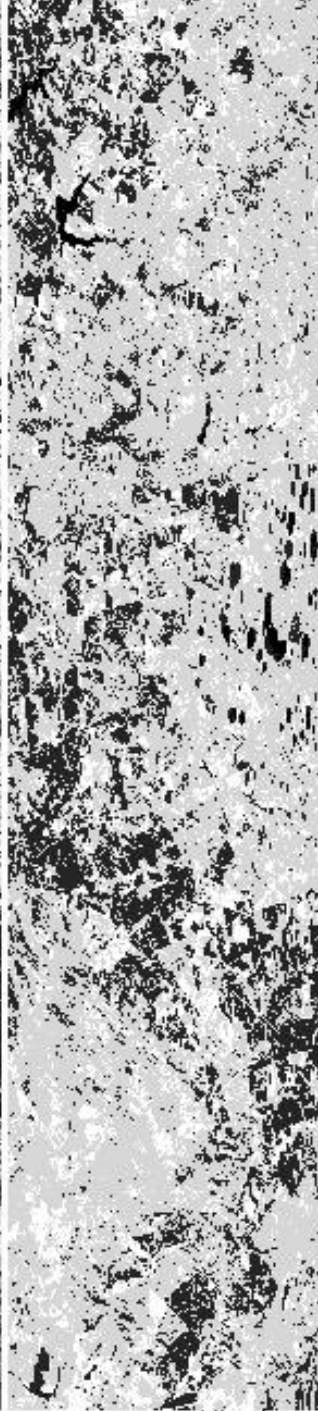
09:18:00
09:20:00
09:22:00
09:24:00
09:26:33



0.66µm (#3)



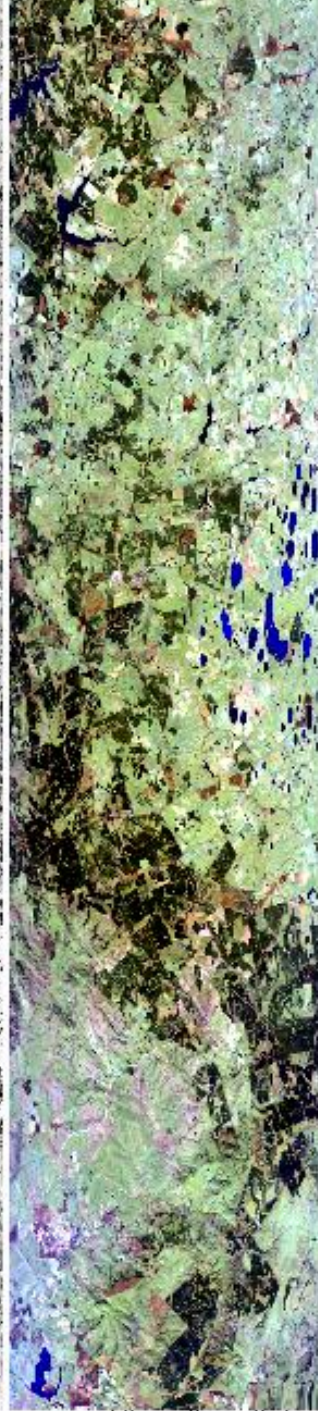
1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

09:18:00
09:20:00
09:22:00
09:24:00
09:26:33

Aircraft Heading = 5.0°
Solar Zenith = 58.4°
GPS Altitude = 20061. m (MSL)

09:26:33



0.66 μm (#3)



1.61 μm (#10)



3.77 μm (#30)



10.94 μm (#45)
reverse scale

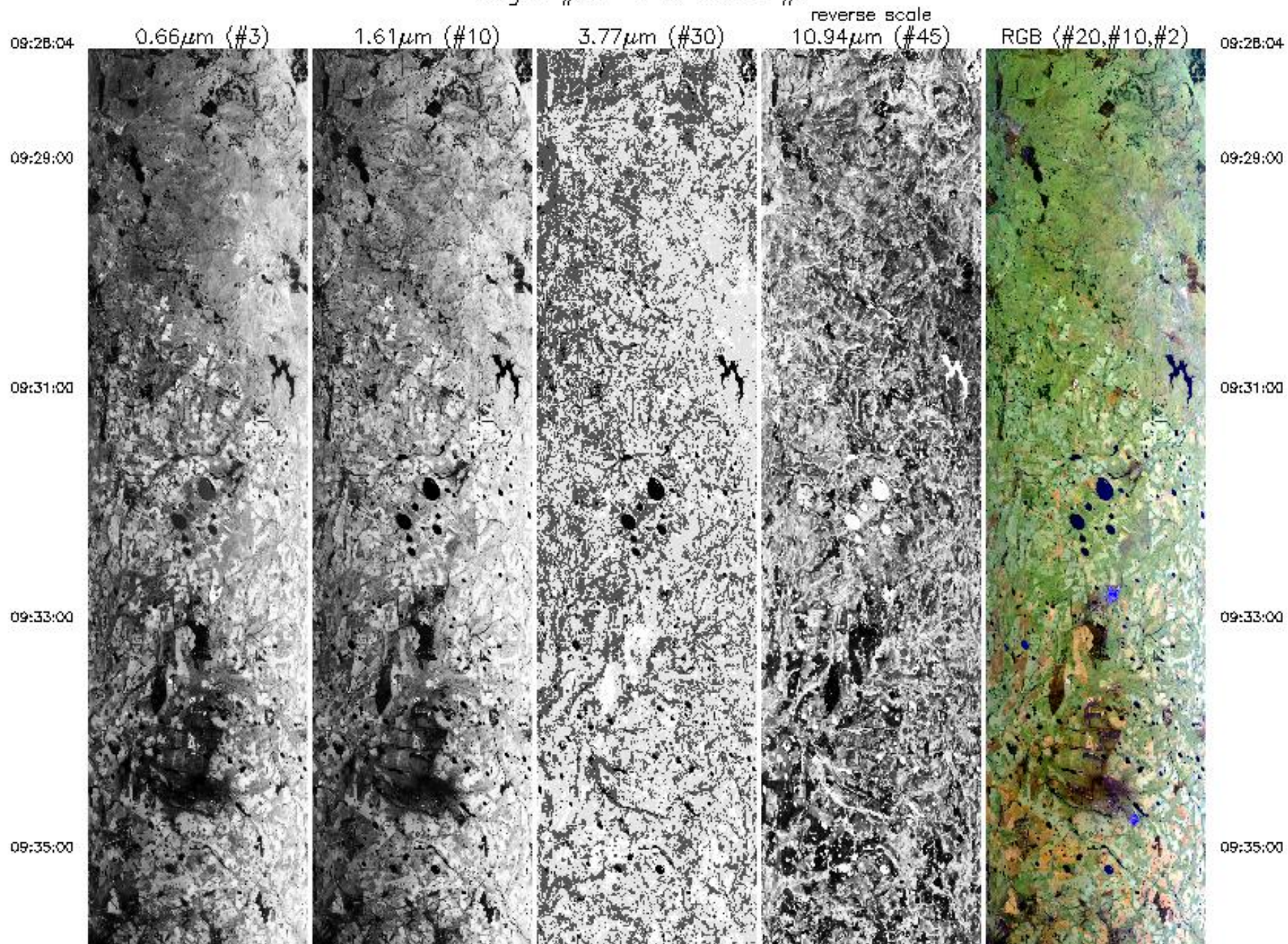


RGB (#20,#10,#2)

09:26:33

Aircraft Heading = 5.0°
Solar Zenith = 58.4°
GPS Altitude = 20061. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #7



09:35:00

09:37:00

09:39:00

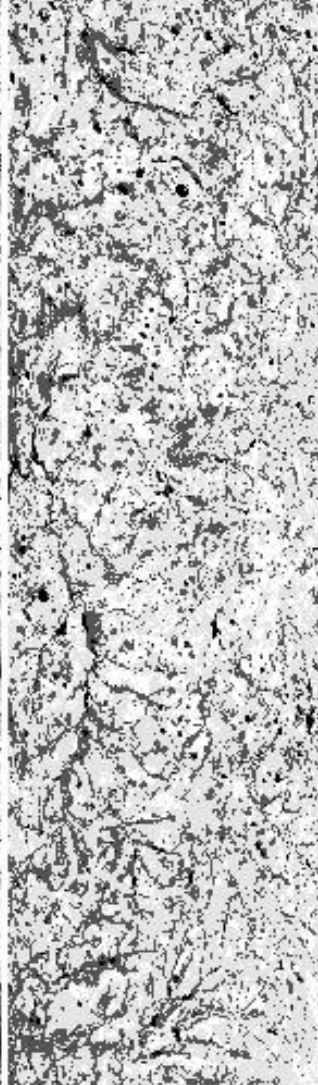
09:40:44



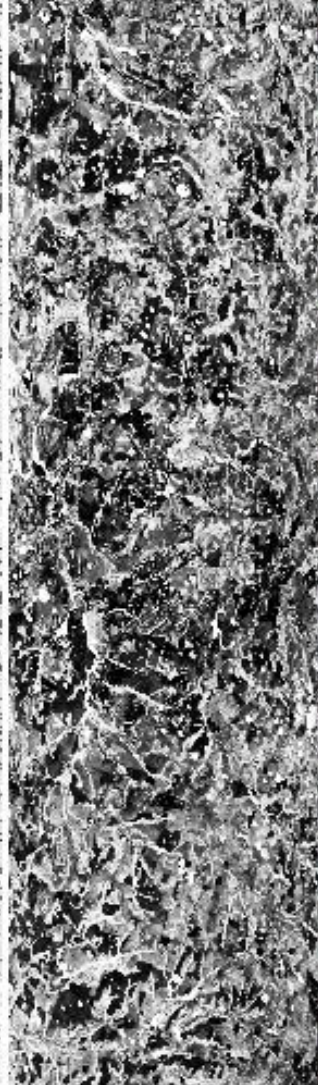
0.66 μ m (#3)



1.61 μ m (#10)



3.77 μ m (#30)



10.94 μ m (#45)
reverse scale



RGB (#20,#10,#2)

09:35:00

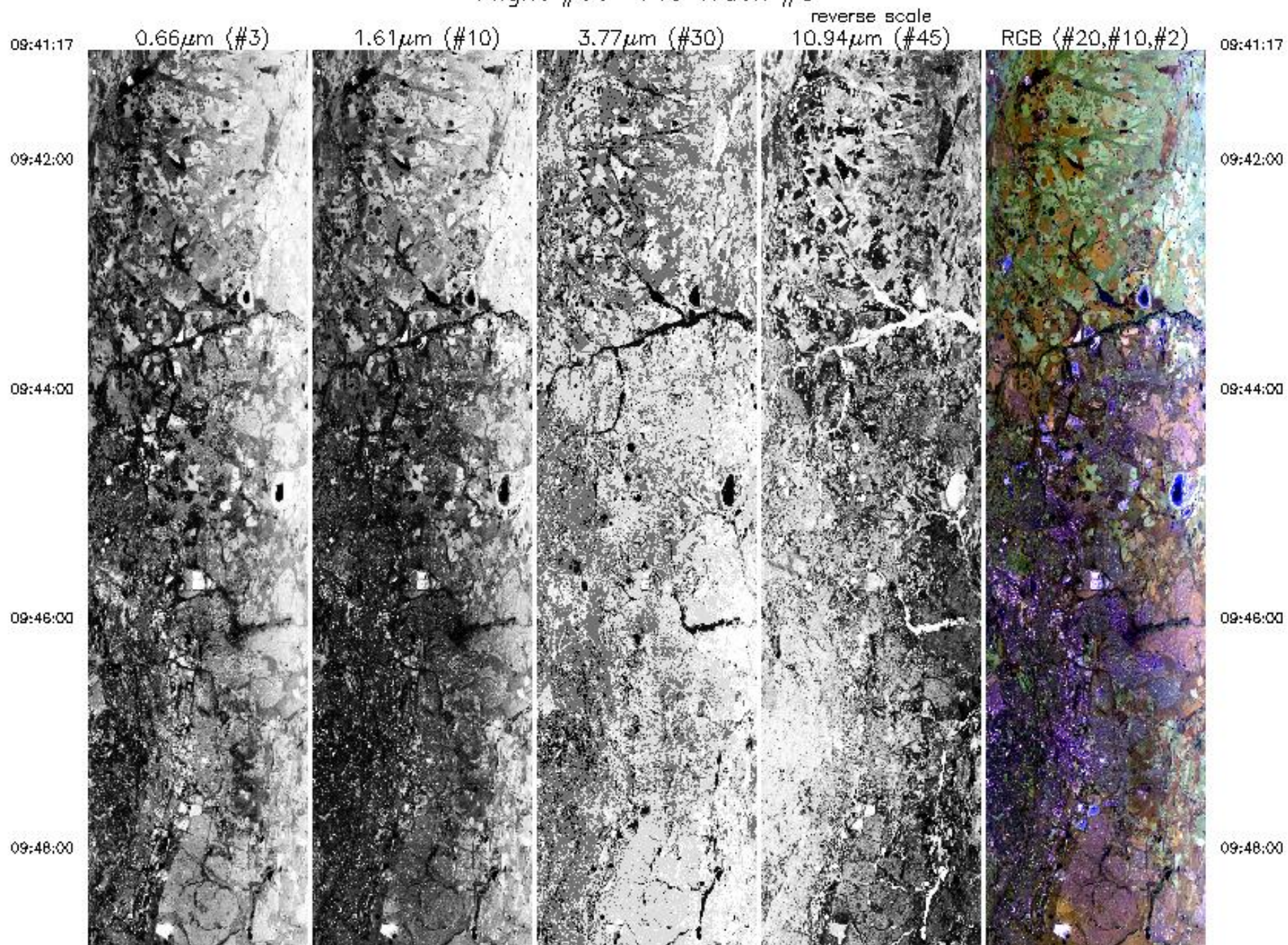
09:37:00

09:39:00

09:40:44

Aircraft Heading = 254.2°
 Solar Zenith = 52.4°
 GPS Altitude = 19979. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #8



09:48:00

09:50:00

09:52:00

09:54:00

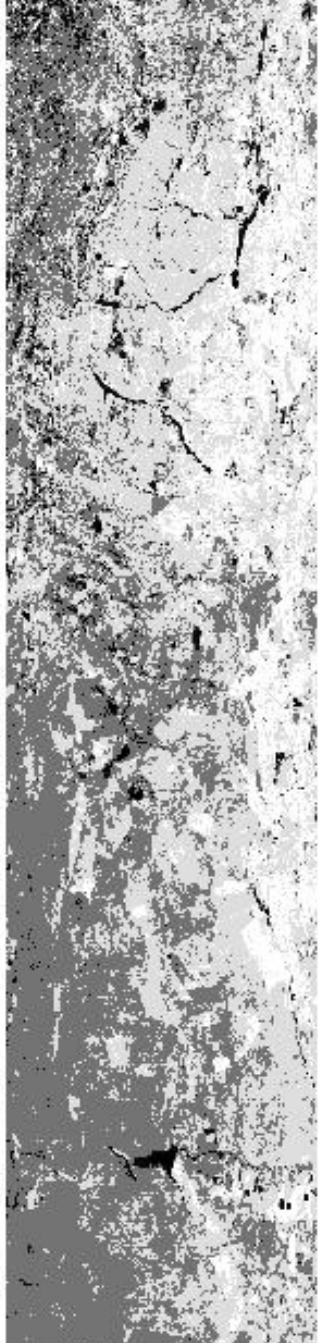
09:55:32



0.66 μm (#3)



1.61 μm (#10)



3.77 μm (#30)



10.94 μm (#45)
reverse scale



RGB (#20,#10,#2)

09:48:00

09:50:00

09:52:00

09:54:00

09:55:32

Aircraft Heading = 271.6°
Solar Zenith = 50.6°
GPS Altitude = 19973. m (MSL)

0.66 μ m (#3)

1.61 μ m (#10)

3.77 μ m (#30)

10.94 μ m (#45)
reverse scale

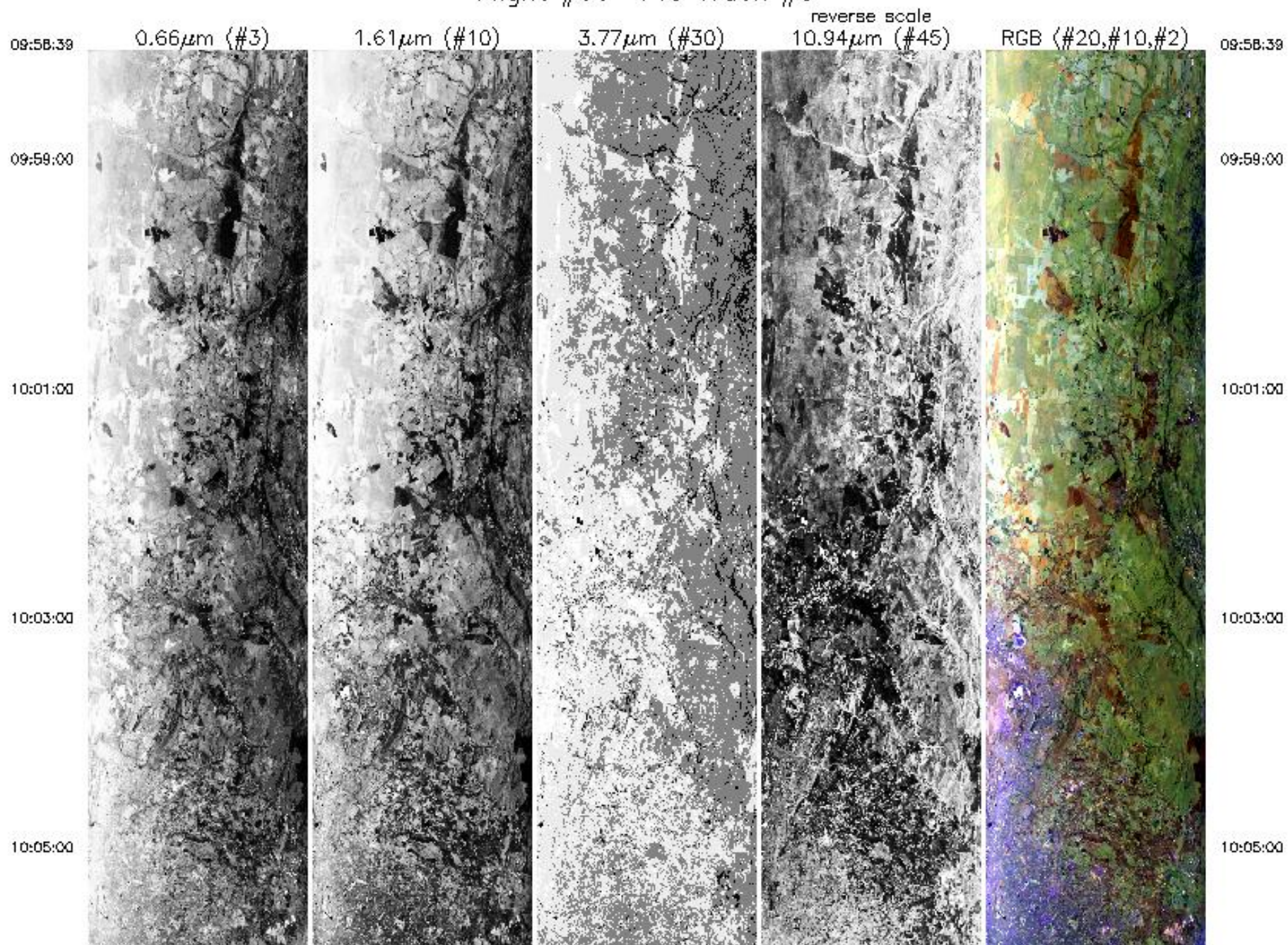
RGB (#20,#10,#2)

Aircraft Heading = 271.6°

Solar Zenith = 50.6°

GPS Altitude = 19973. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #9



10:05:00

10:05:00

10:07:00

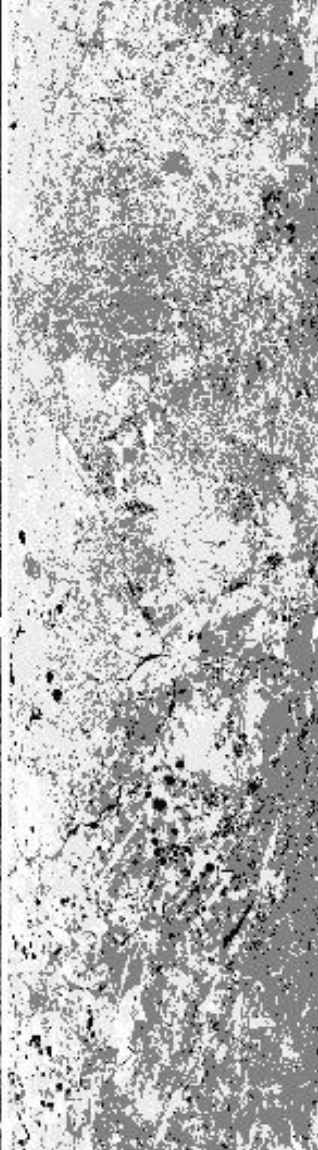
10:07:00

10:09:00

10:09:00

10:11:48

10:11:48



0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)
reverse scale

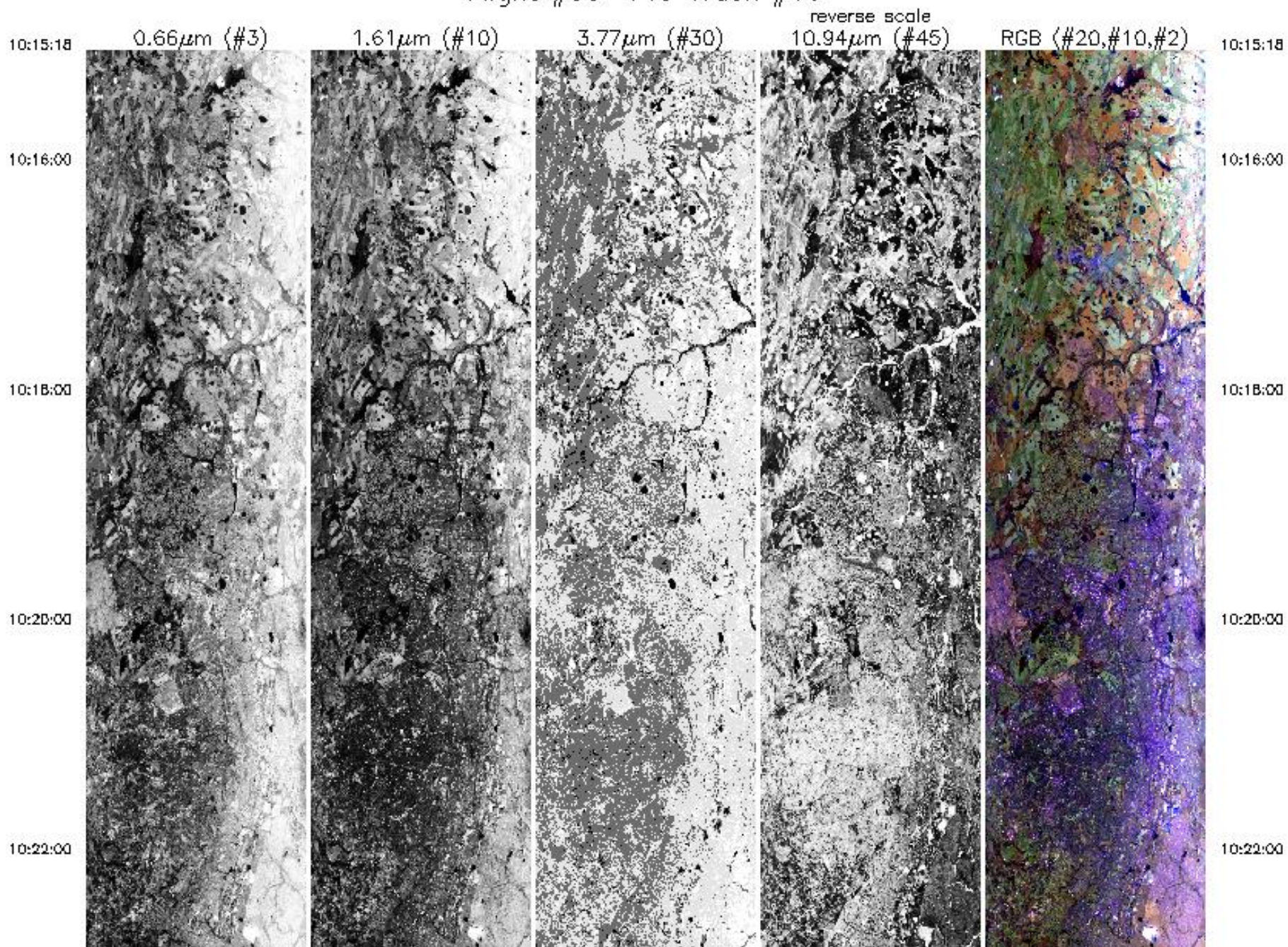
RGB (#20, #10, #2)

Aircraft Heading = 88.3°

Solar Zenith = 47.9°

GPS Altitude = 19996. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #10



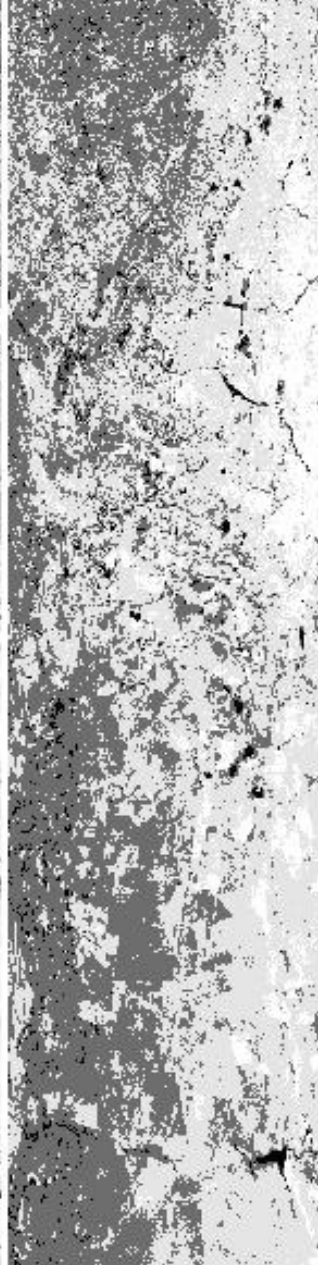
10:22:00

10:24:00

10:26:00

10:28:00

10:29:08



10:22:00

10:24:00

10:26:00

10:28:00

10:29:08

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)
reverse scale

RGB (#20,#10,#2)

Aircraft Heading = 265.3°

Solar Zenith = 45.4°

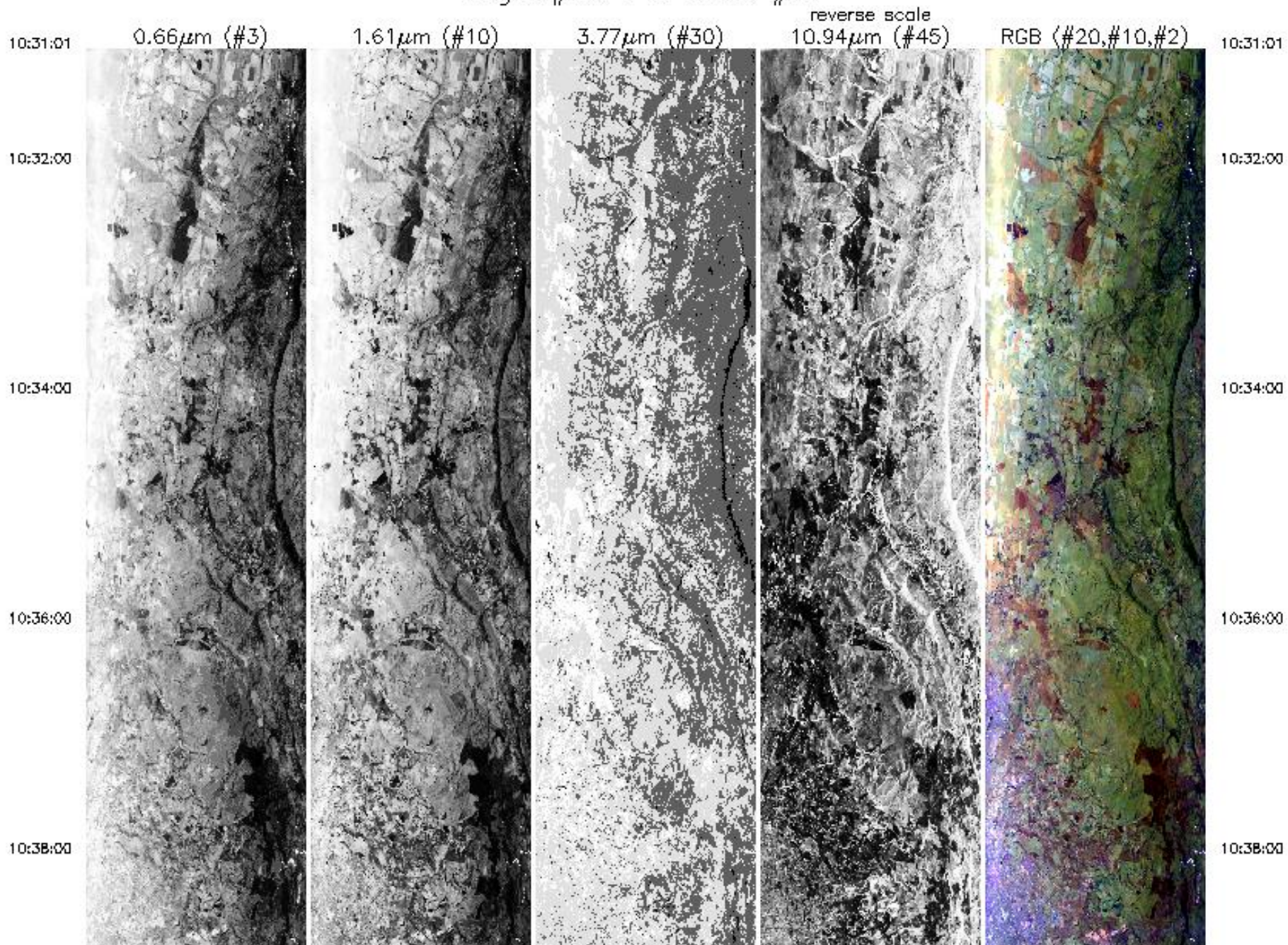
GPS Altitude = 20006. m (MSL)

Aircraft Heading = 265.3°

Solar Zenith = 45.4°

GPS Altitude = 20006. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #11

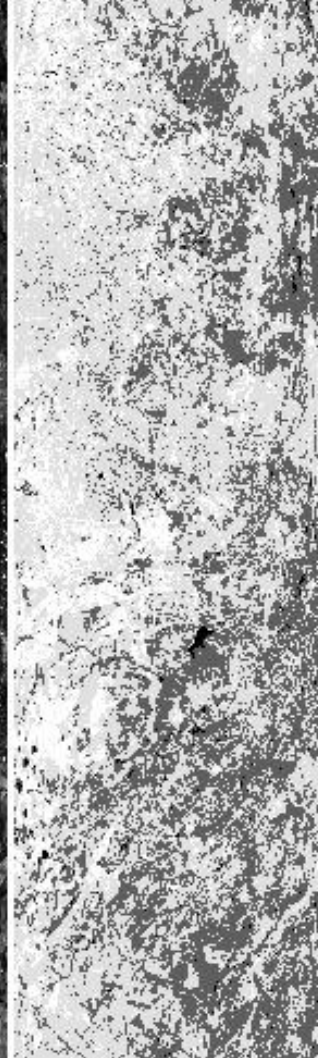


10:38:00

10:40:00

10:42:00

10:43:31



10:38:00

10:40:00

10:42:00

10:43:31

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)
reverse scale

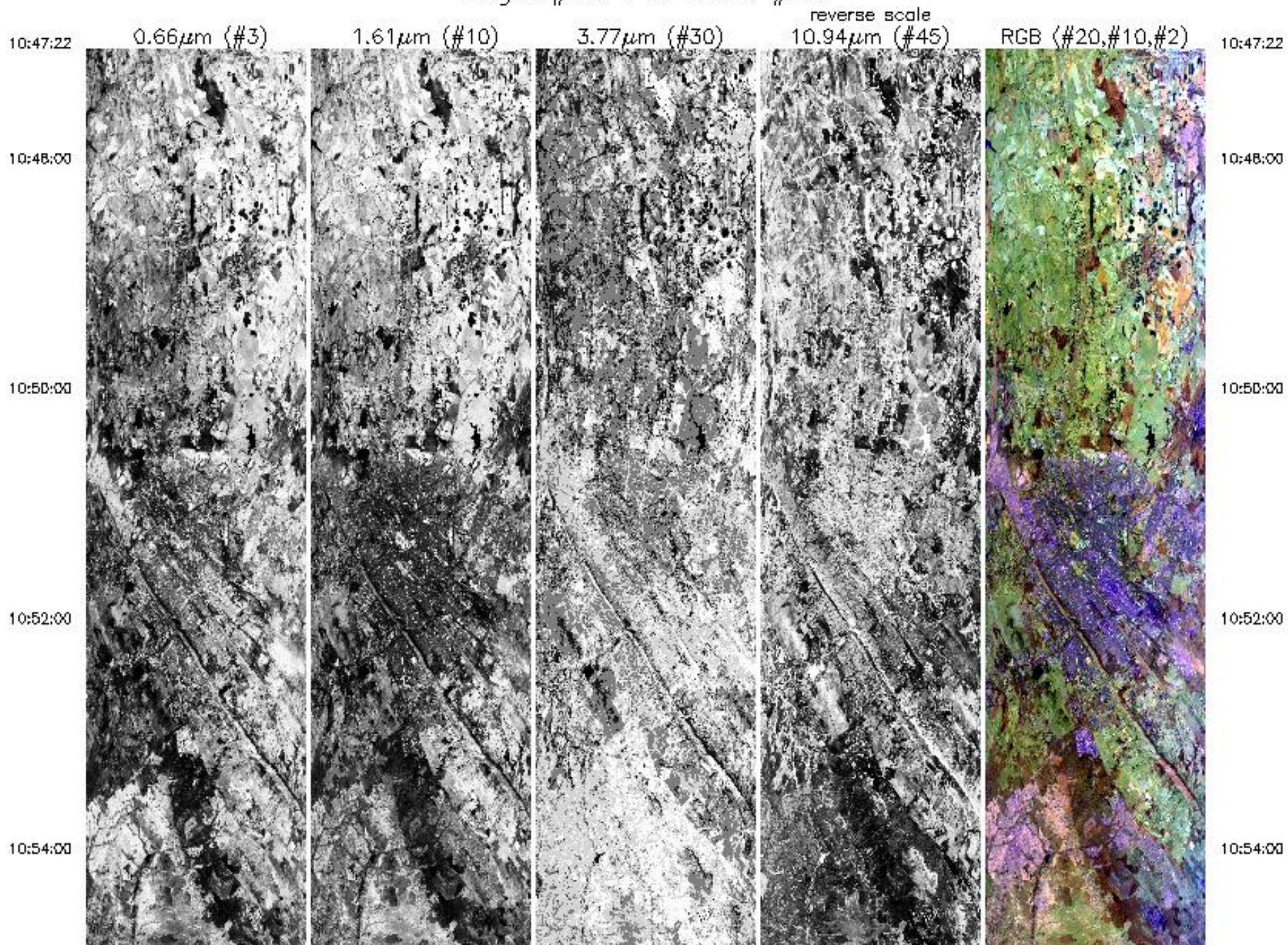
RGB (#20,#10,#2)

Aircraft Heading = 84.4°

Solar Zenith = 43.5°

GPS Altitude = 20154. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #12



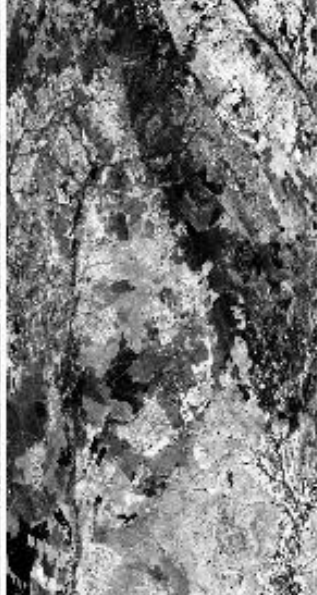
10:54:00

10:56:00

10:57:01



0.66µm (#3)



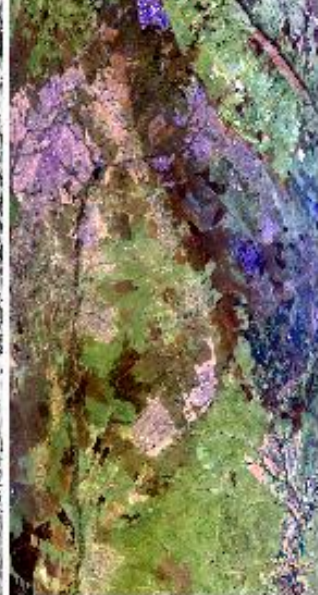
1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

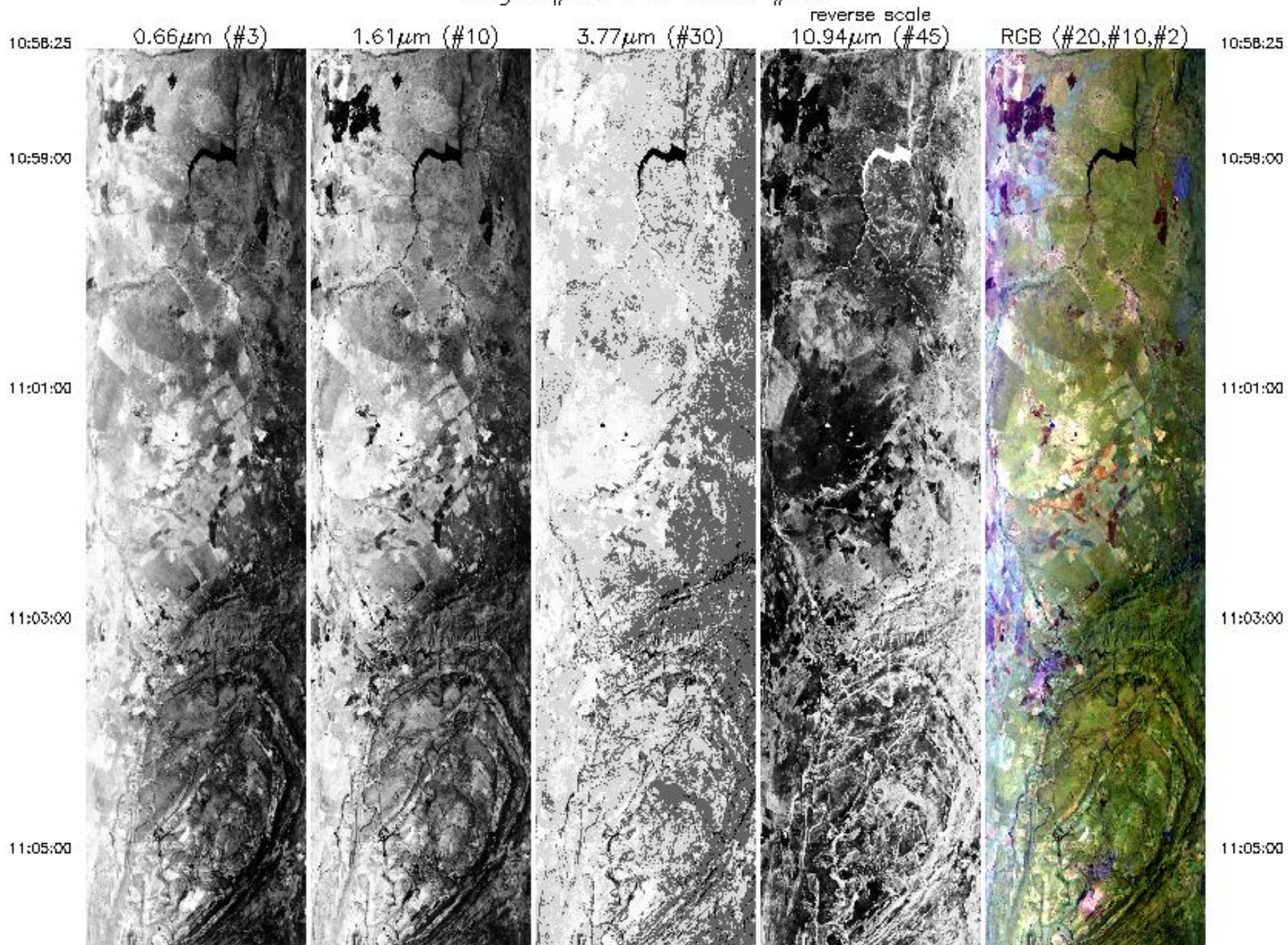
10:54:00

10:56:00

10:57:01

Aircraft Heading = 308.4°
 Solar Zenith = 41.5°
 GPS Altitude = 19856. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #13



11:05:00



11:07:00



11:08:00



11:11:00



11:13:00



11:05:00

11:07:00

11:08:00

11:11:00

11:13:00

11:13:00

11:15:00

11:17:00

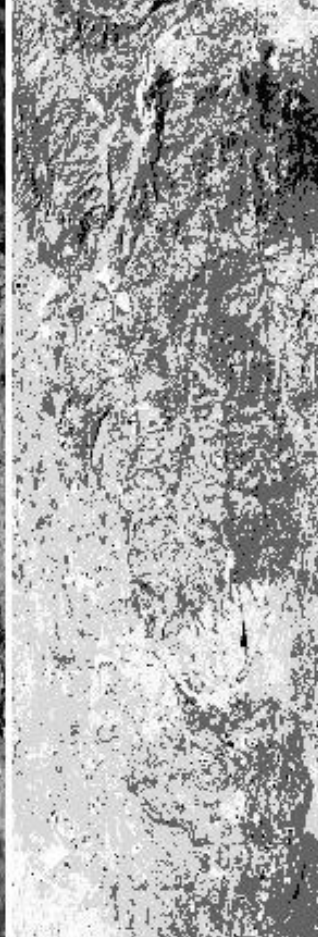
11:18:24



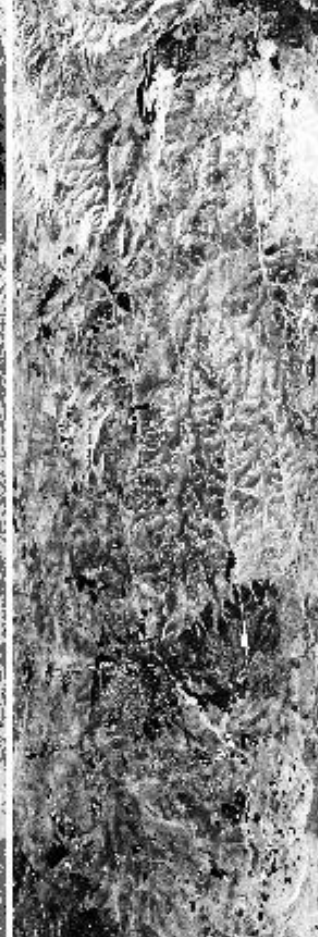
0.66 μ m (#3)



1.61 μ m (#10)



3.77 μ m (#30)



10.94 μ m (#45)
reverse scale



RGB (#20,#10,#2)

11:13:00

11:15:00

11:17:00

11:18:24

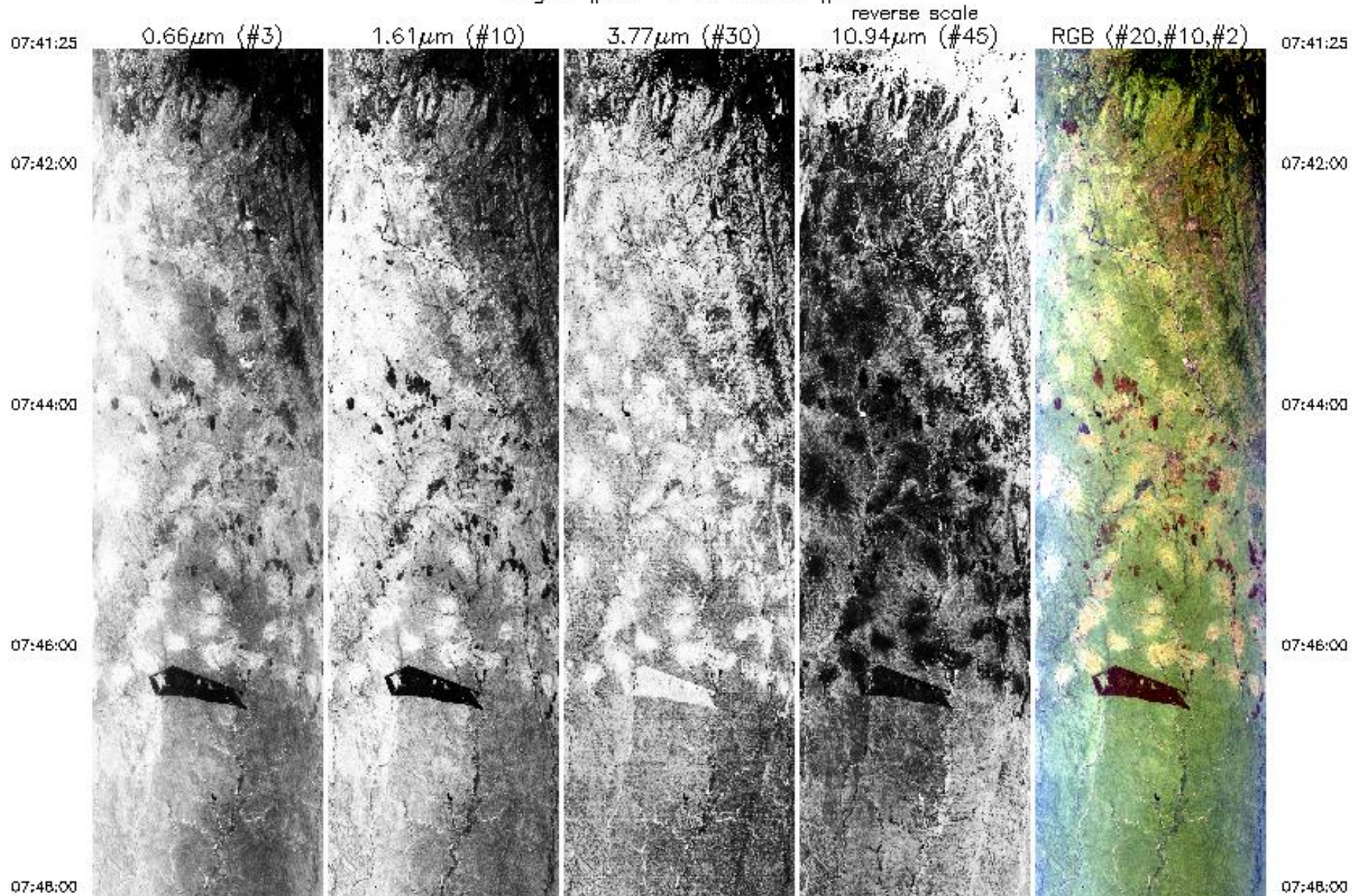
Aircraft Heading = 54.9°

Solar Zenith = 39.9°

GPS Altitude = 19951. m (MSL)

Flight #00-149 Browse Imagery

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
S.A., Mozambique
Flight #00-149 Track #1



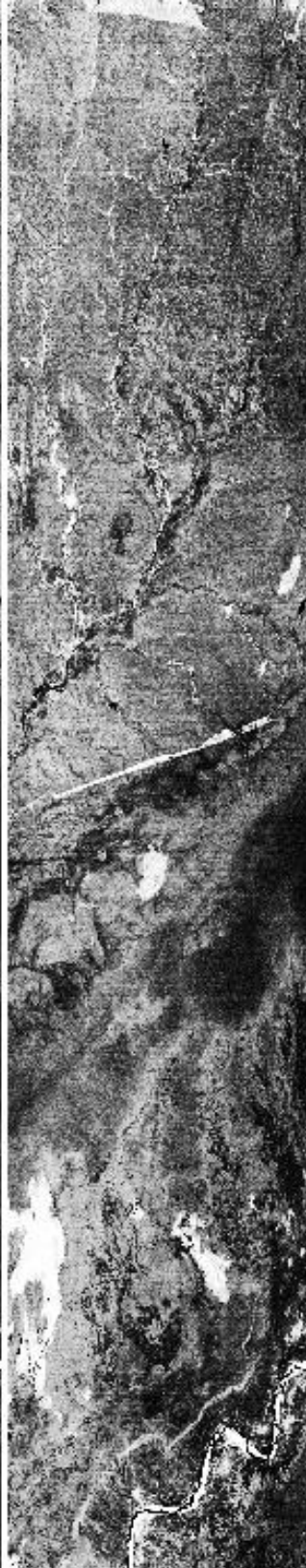
07:48:00

07:50:00

07:52:00

07:54:00

07:56:00



07:48:00

07:50:00

07:52:00

07:54:00

07:56:00

07:58:00



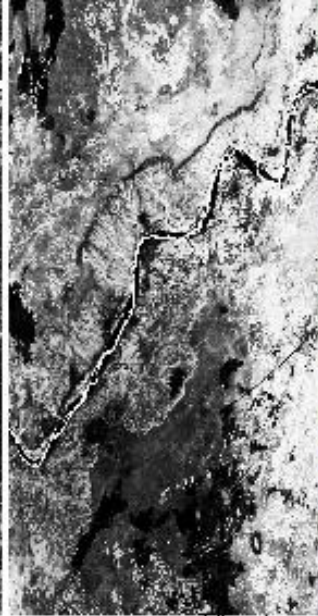
0.66 μ m (#3)



1.61 μ m (#10)



3.77 μ m (#30)



10.94 μ m (#45)
reverse scale



RGB (#20,#10,#2)

07:58:00

07:58:43

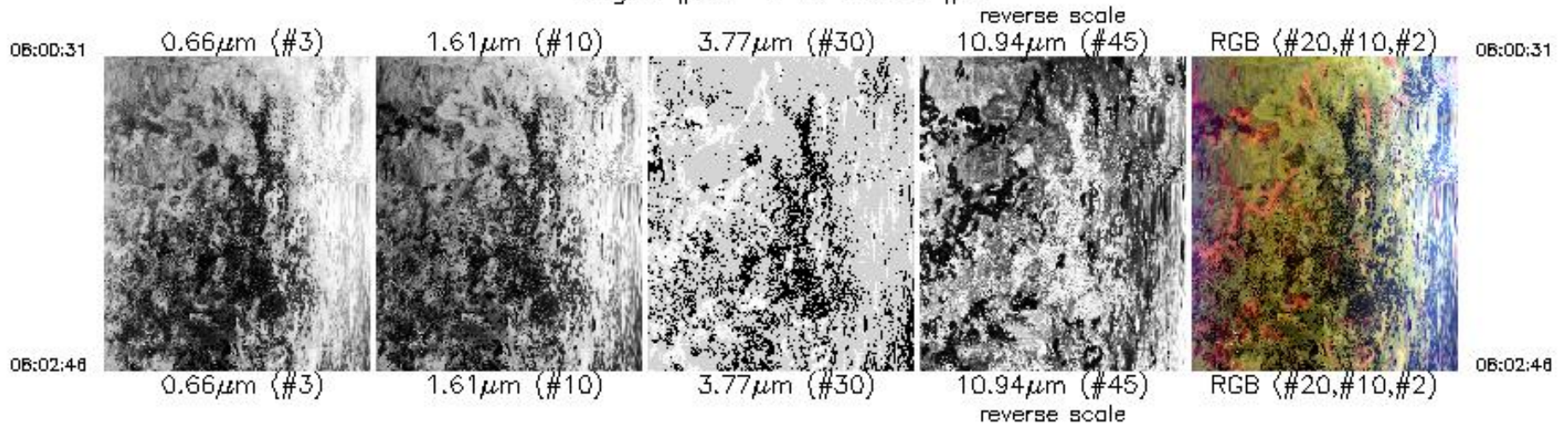
07:58:43

Aircraft Heading = 91.9°

Solar Zenith = 72.2°

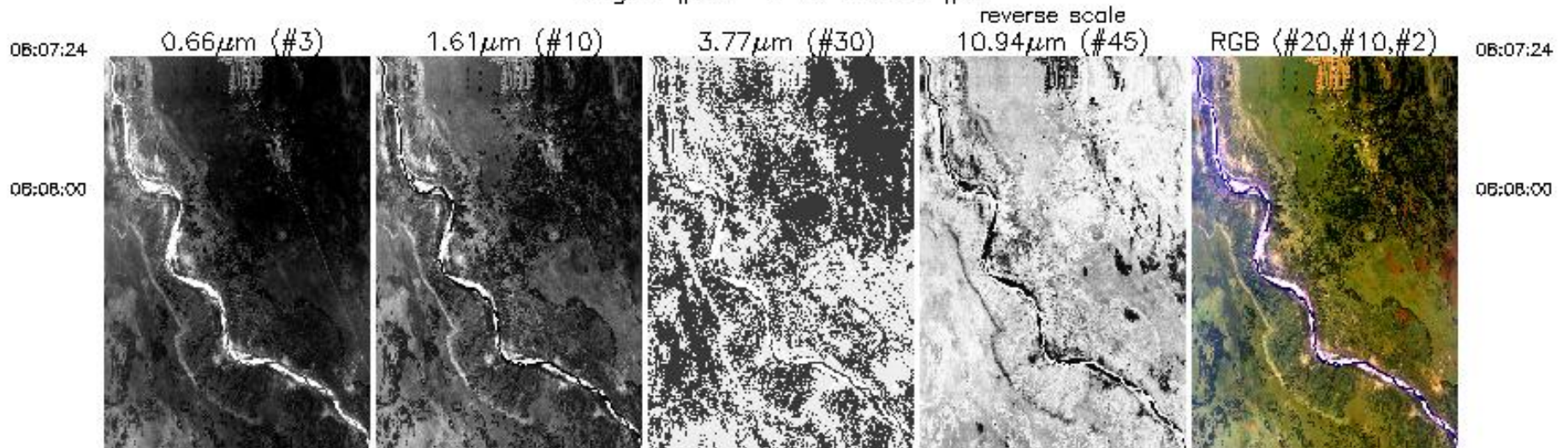
GPS Altitude = 19066. m (MSL)

MODIS Airborne Simulator Browse Imagery
 SAFARI 2000 Campaign – 22 Aug 2000
 Mozabique
 Flight #00–149 Track #2



Aircraft Heading = 332.6°
 Solar Zenith = 67.9°
 GPS Altitude = 19851. m (MSL)

MODIS Airborne Simulator Browse Imagery
 SAFARI 2000 Campaign – 22 Aug 2000
 S.A., Mozabique
 Flight #00–149 Track #3



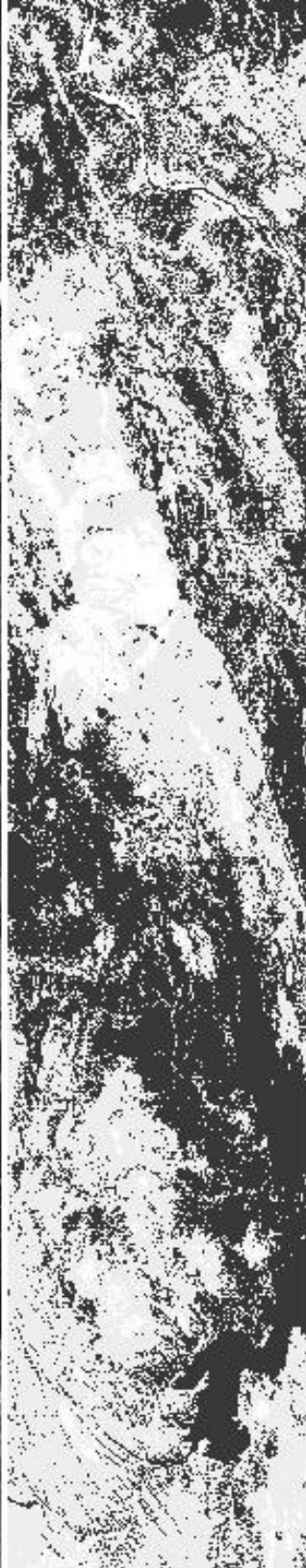
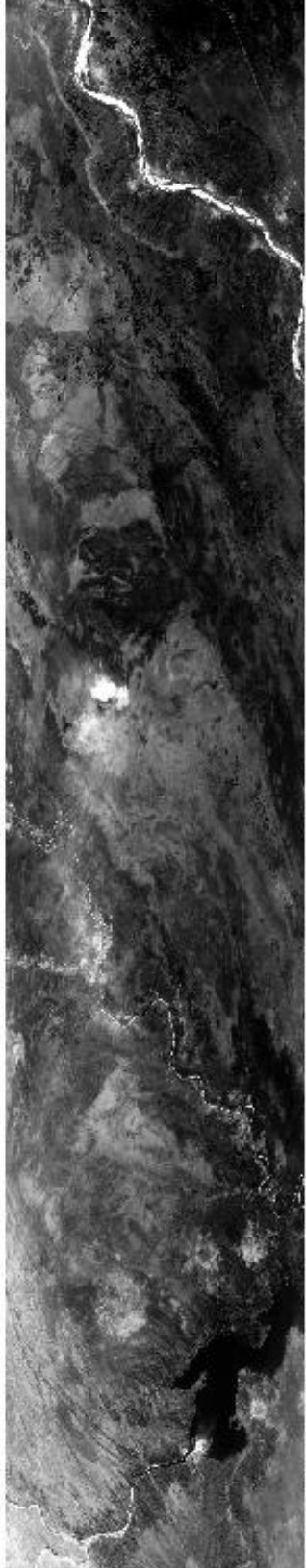
08:10:00

08:12:00

08:14:00

08:16:00

08:18:00



08:10:00

08:12:00

08:14:00

08:16:00

08:18:00

06:18:00

06:20:00

06:22:00

06:24:00

06:26:00



06:18:00

06:20:00

06:22:00

06:24:00

06:26:00

06:26:00



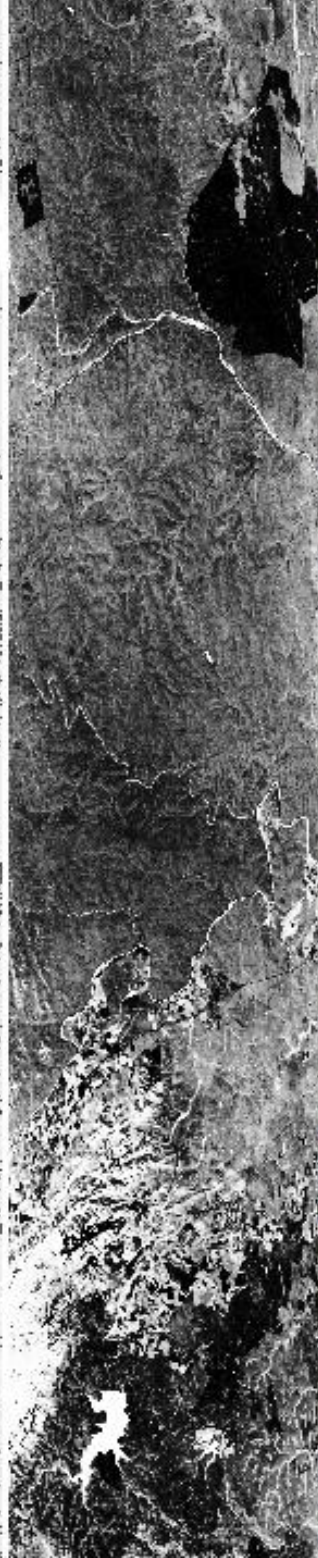
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



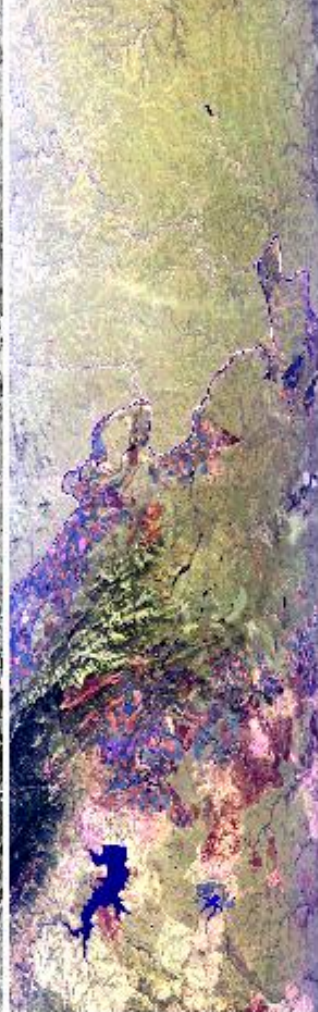
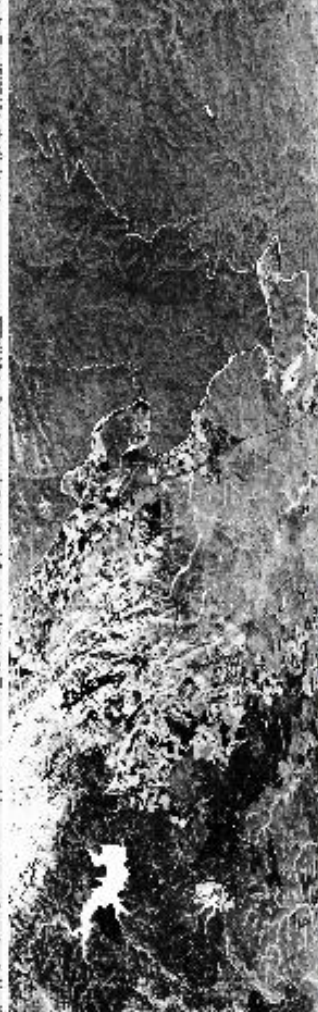
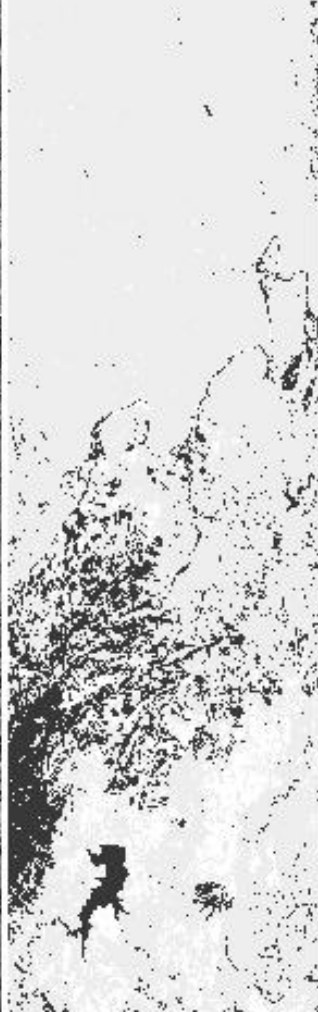
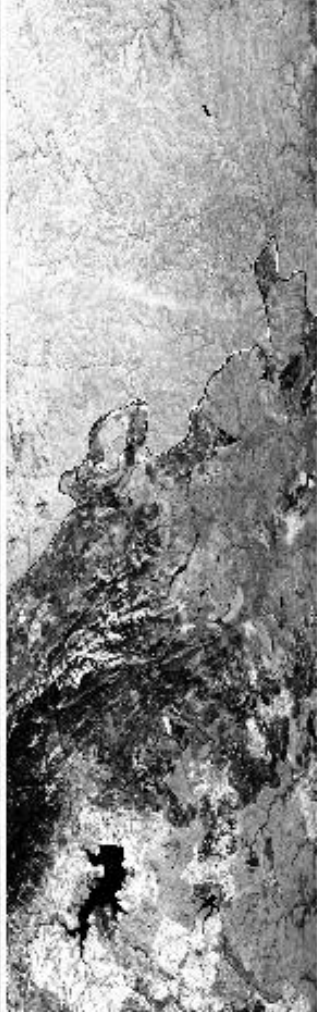
10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

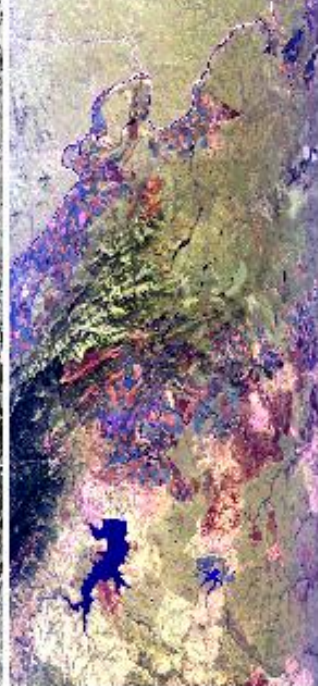
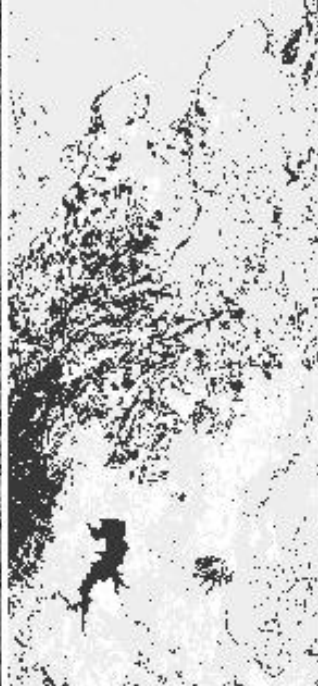
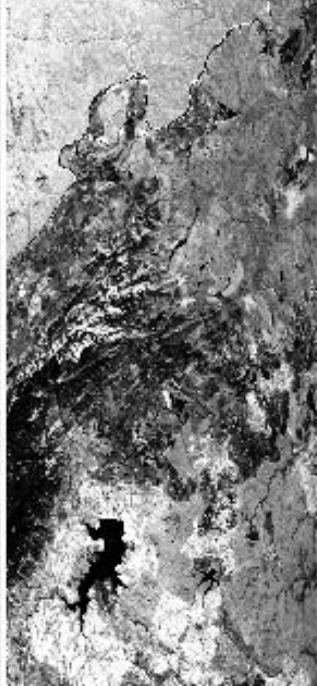
06:26:00

08:28:00



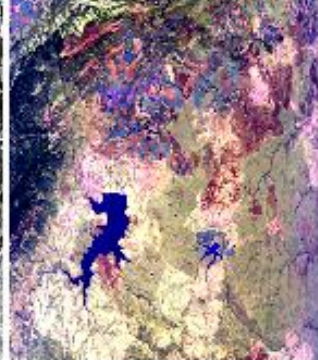
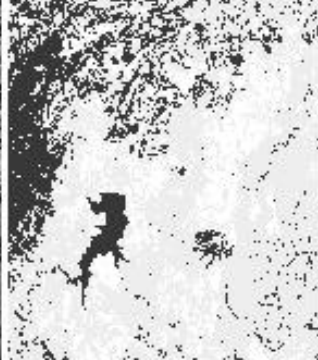
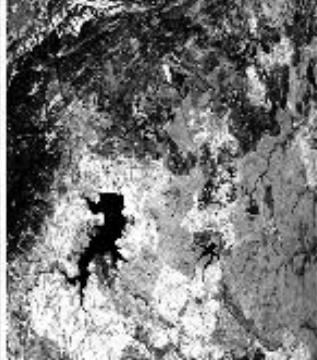
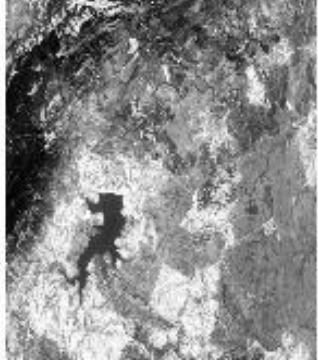
08:28:00

08:30:00



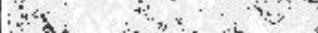
08:30:00

08:32:00

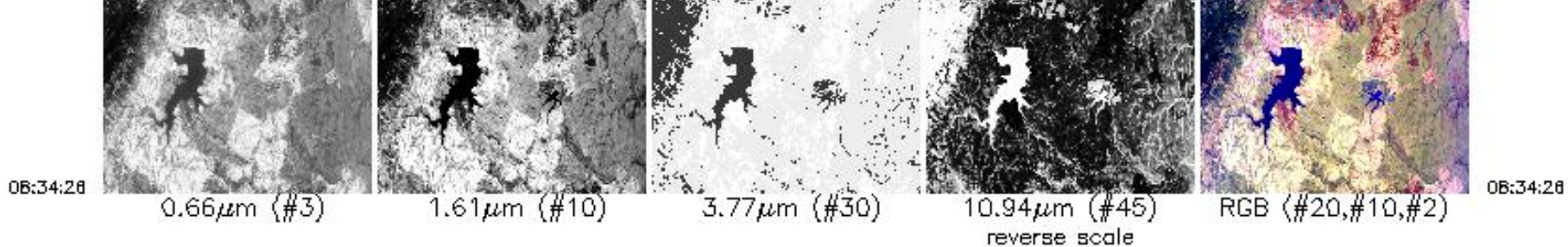


08:32:00

06:34:28

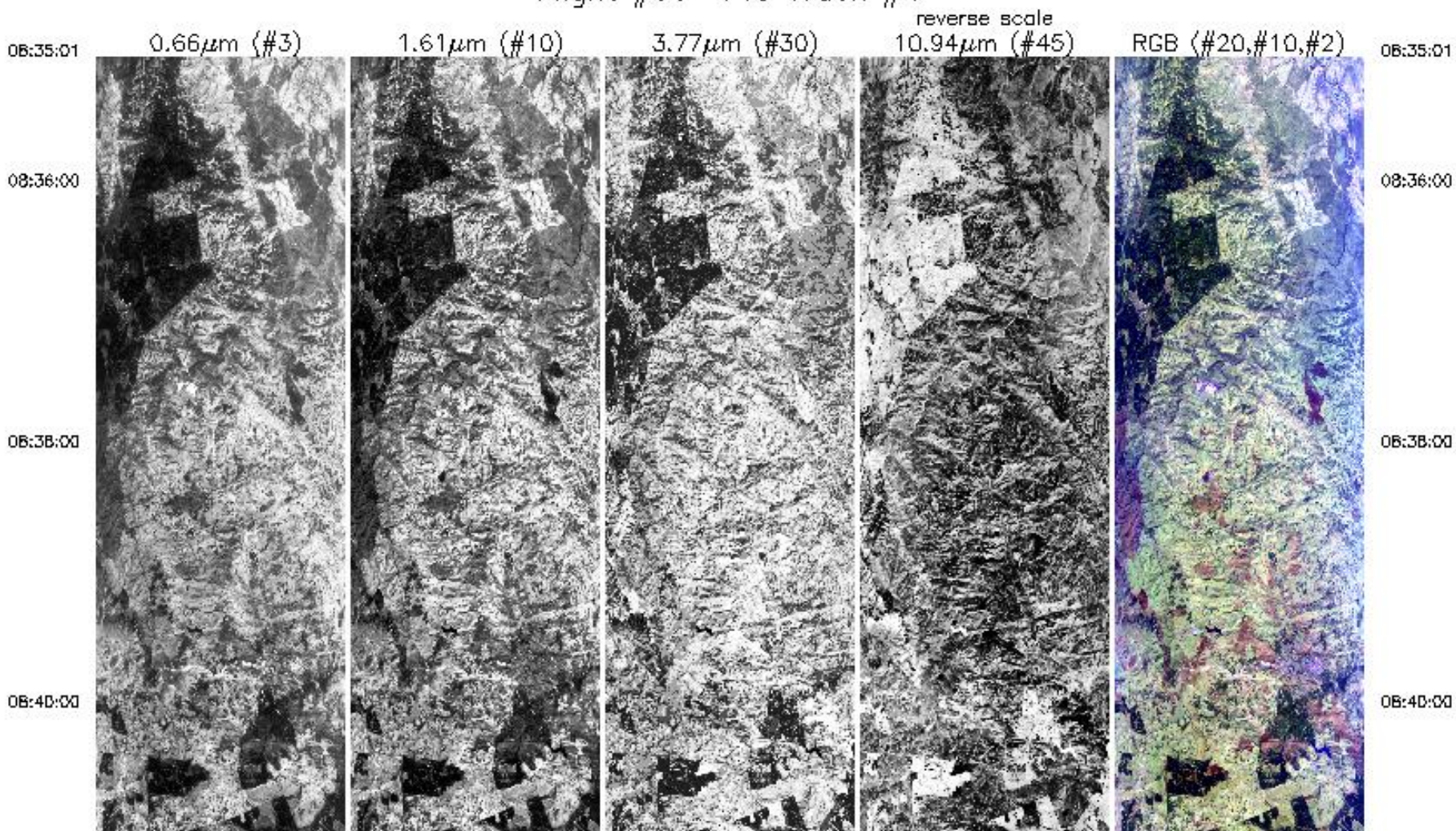


06:34:28



Aircraft Heading = 176.4°
 Solar Zenith = 66.5°
 GPS Altitude = 20023. m (MSL)

MODIS Airborne Simulator Browse Imagery
 SAFARI 2000 Campaign - 22 Aug 2000
 S.A., Swaziland
 Flight #00-149 Track #4



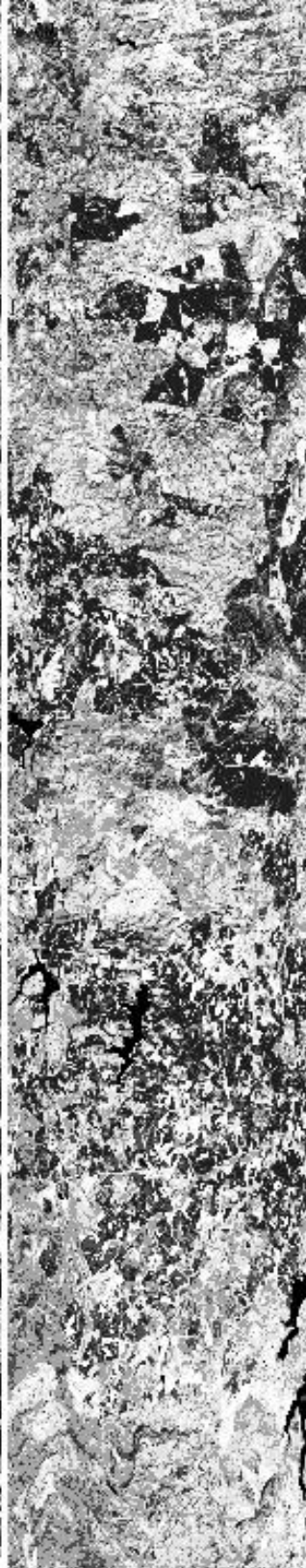
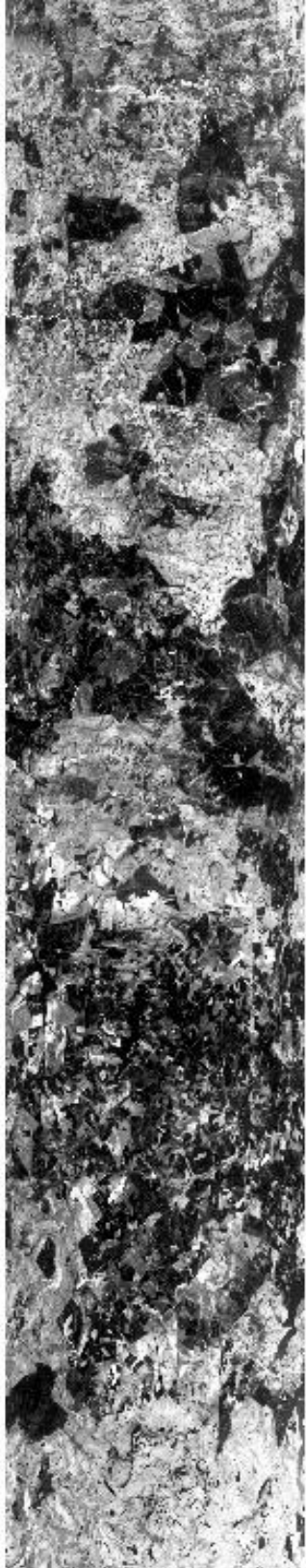
08:40:00

08:42:00

08:44:00

08:46:00

08:48:00



08:40:00

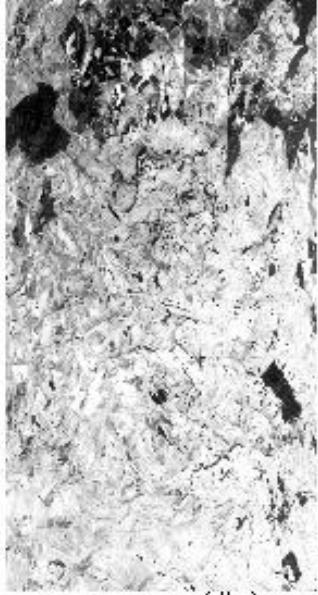
08:42:00

08:44:00

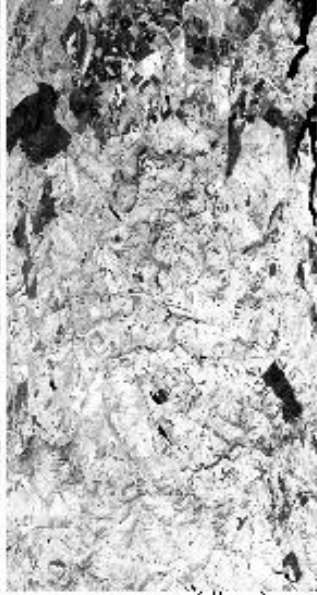
08:46:00

08:48:00

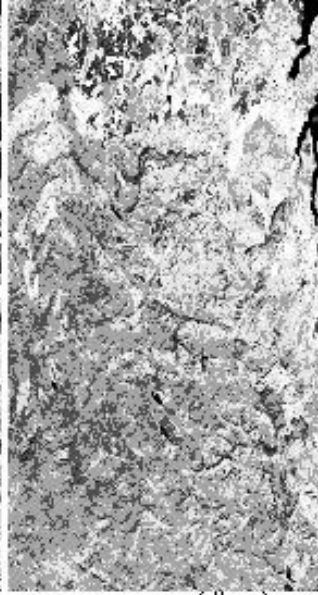
08:48:00



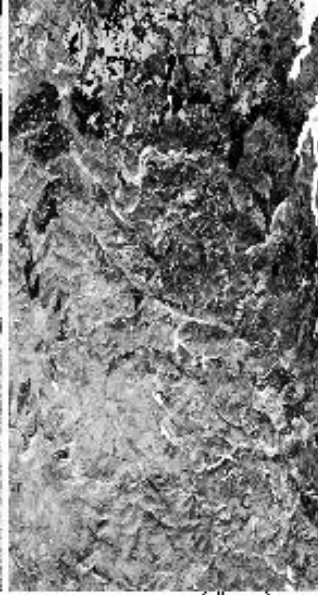
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

08:48:00

08:50:00

08:50:00

08:51:01

08:51:01

Aircraft Heading = 225.5°

Solar Zenith = 62.3°

GPS Altitude = 20150. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign - 22 Aug 2000

South Africa

Flight #00-149 Track #5

08:51:32

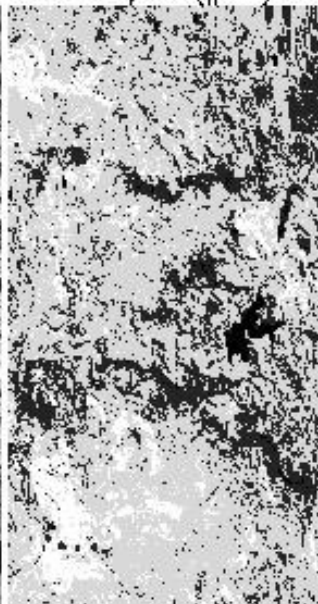
0.66µm (#3)



1.61µm (#10)



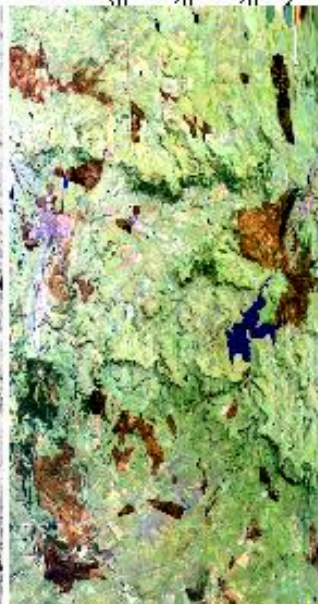
3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)



08:51:32

08:52:00

08:52:00

08:54:00

08:54:00

06:54:00

08:56:00

08:58:00

09:00:00

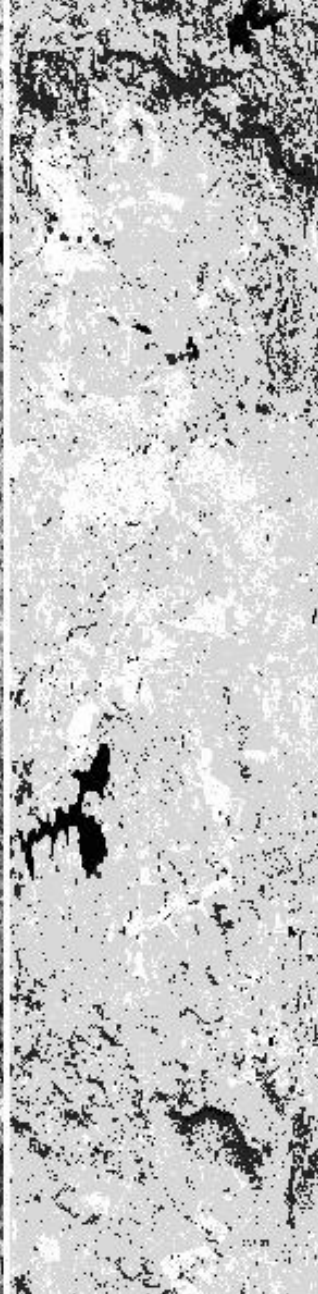
09:01:23



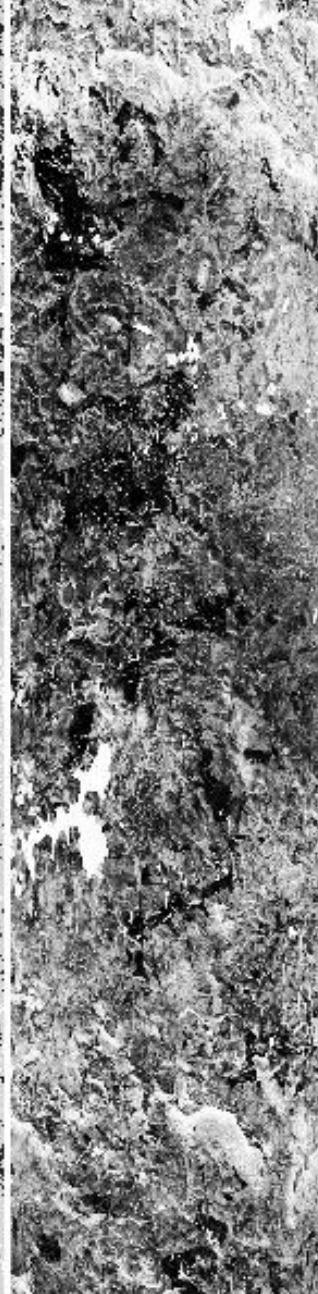
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

06:54:00

08:56:00

08:58:00

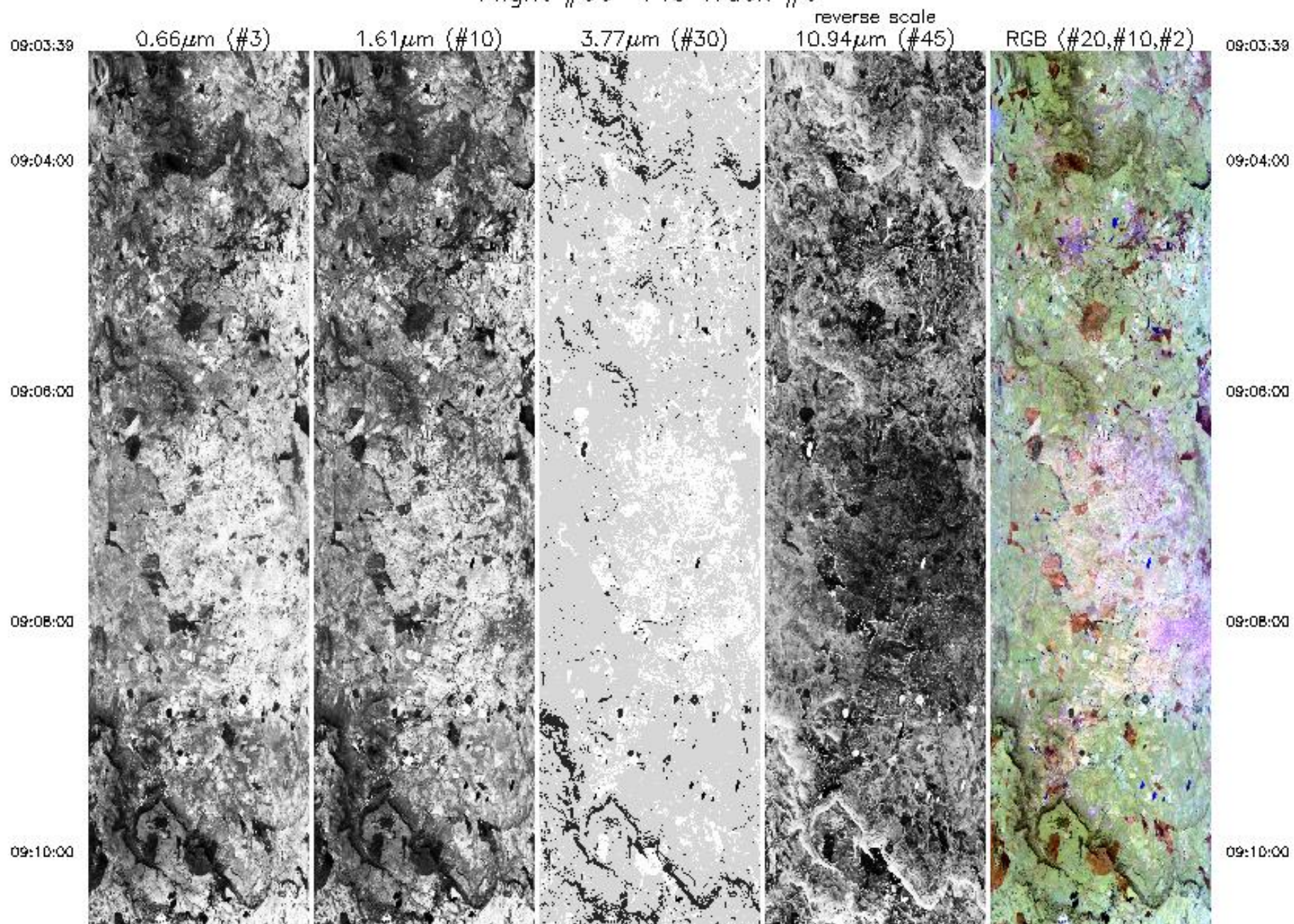
09:00:00

09:01:23

Aircraft Heading = 196.2°
Solar Zenith = 59.9°
GPS Altitude = 20079. m (MSL)

Aircraft Heading = 196.2°
Solar Zenith = 59.9°
GPS Altitude = 20079. m (MSL)

MODIS Airborne Simulator Browse Imagery
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Flight #00-149 Track #6



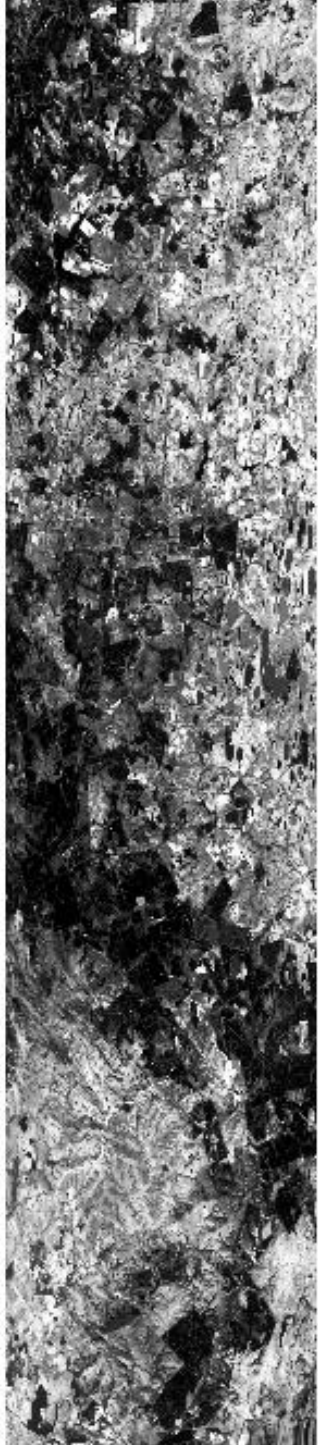
09:18:00

09:20:00

09:22:00

09:24:00

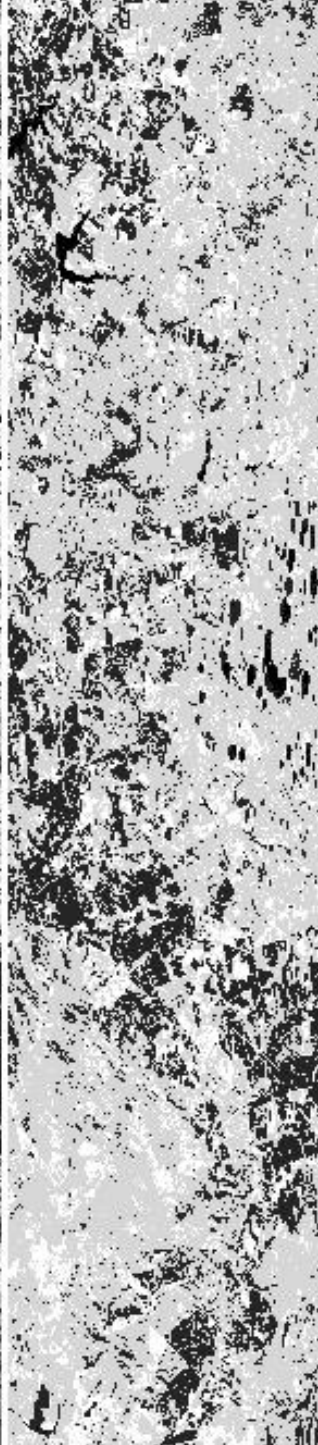
09:26:33



0.66µm (#3)



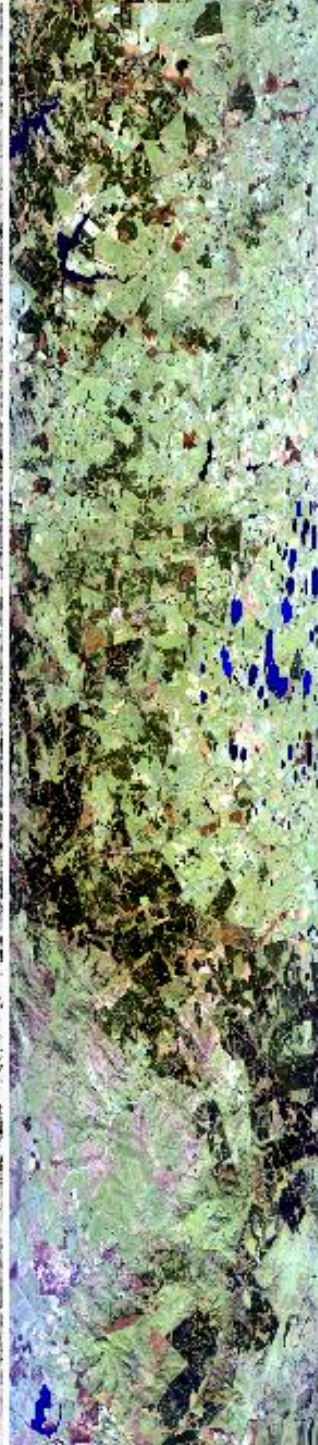
1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

09:18:00

09:20:00

09:22:00

09:24:00

09:26:33

Aircraft Heading = 5.0°

Solar Zenith = 58.4°

CDS Altitude = 20061 m (MSL)

09:28:33



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (<#20,#10,#2)

09:28:33

Aircraft Heading = 5.0°

Solar Zenith = 58.4°

GPS Altitude = 20061. m (MSL)

MODIS Airborne Simulator Browse Imagery

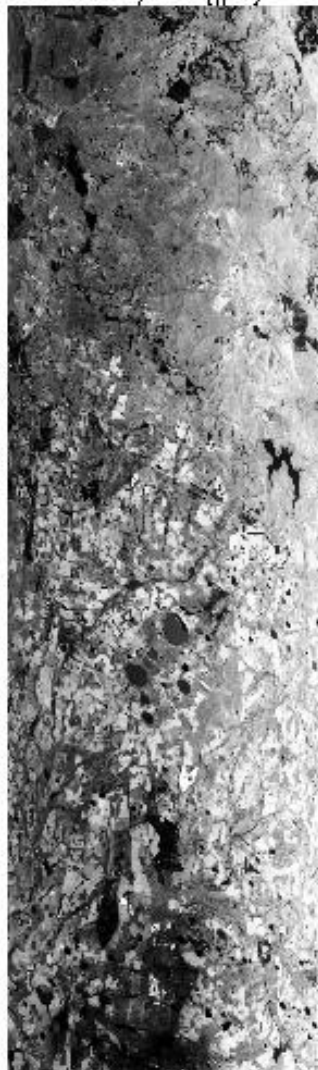
SAFARI 2000 Campaign – 22 Aug 2000

South Africa

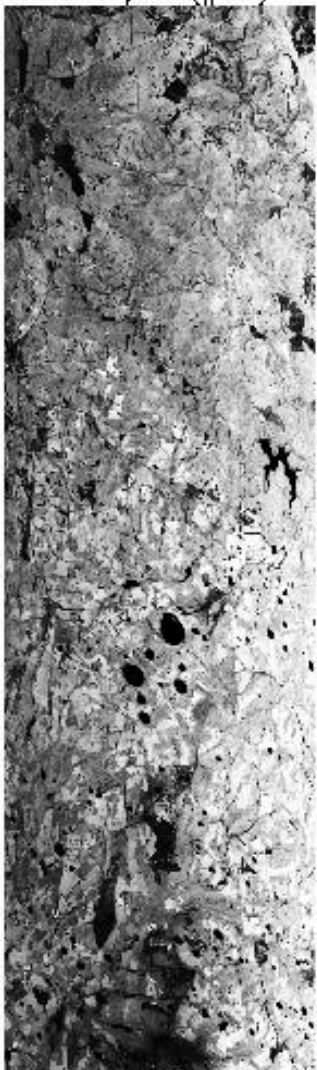
Flight #00–149 Track #7

09:28:04

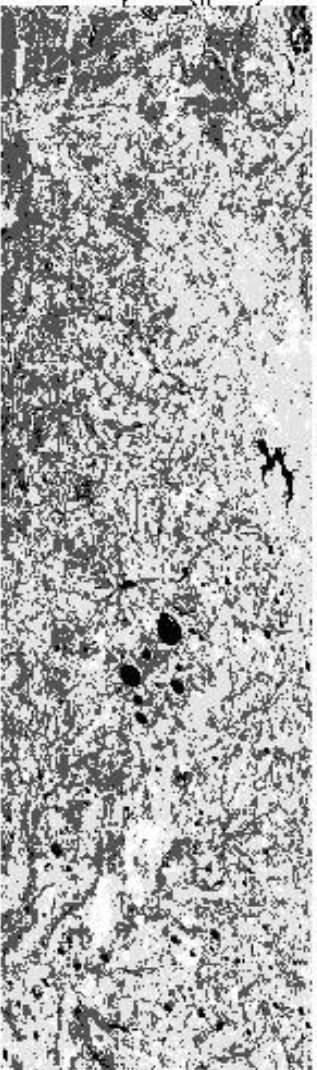
0.66µm (#3)



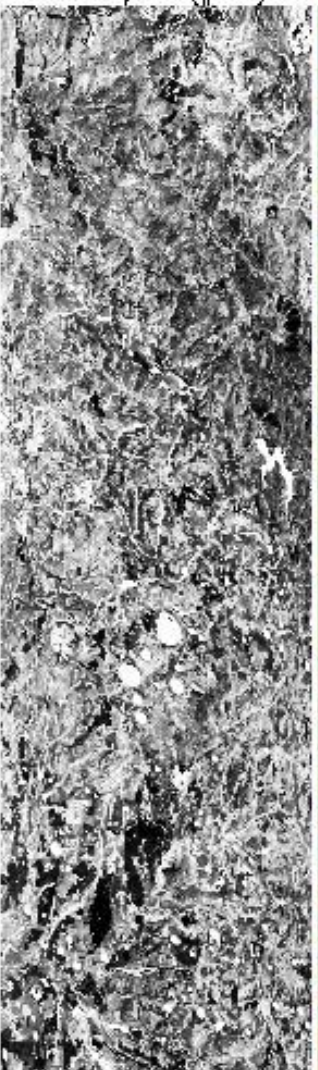
1.61µm (#10)



3.77µm (#30)



reverse scale
10.94µm (#45)



RGB (<#20,#10,#2)



09:28:04

09:29:00

09:29:00

09:31:00

09:31:00

09:33:00

09:33:00

09:33:00

09:35:00

09:37:00

09:39:00

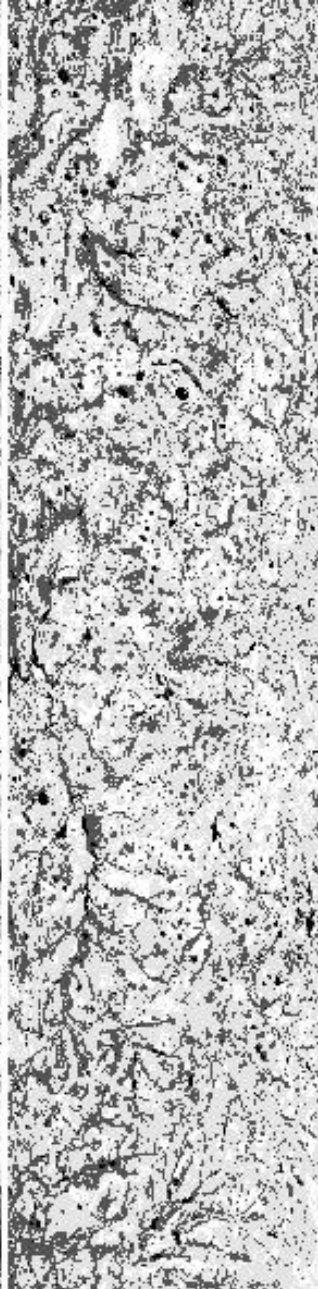
09:40:44



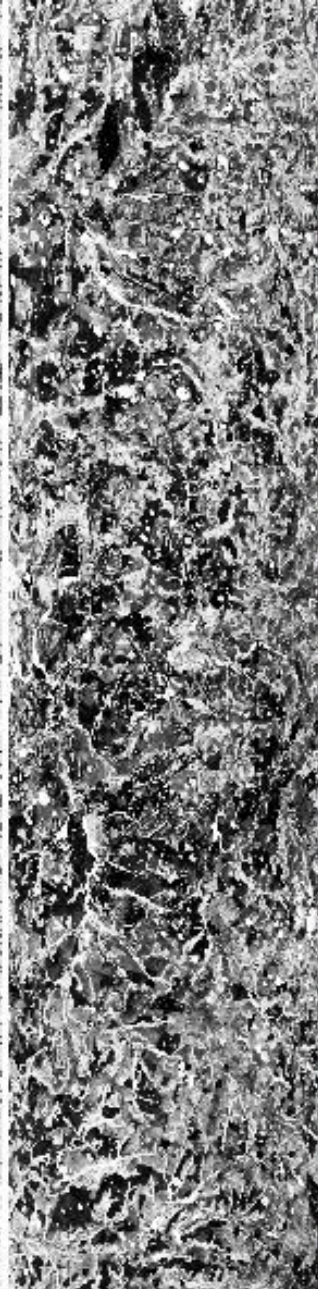
0.66µm (#3)



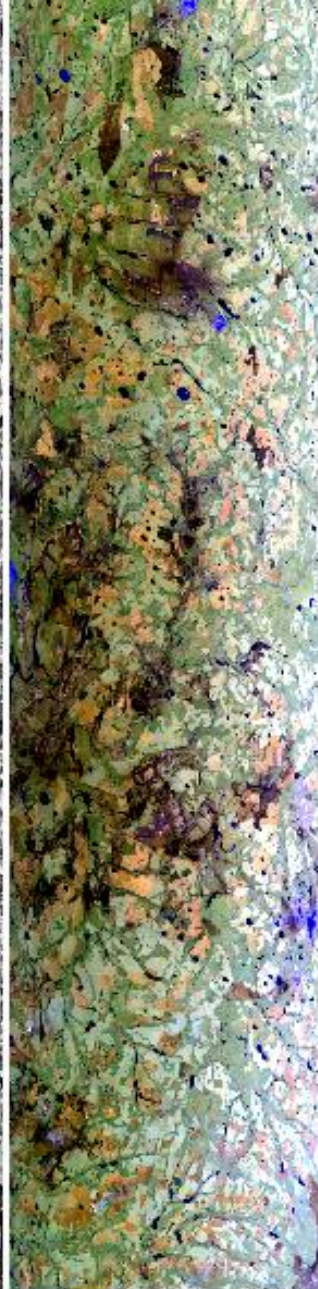
1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

09:33:00

09:35:00

09:37:00

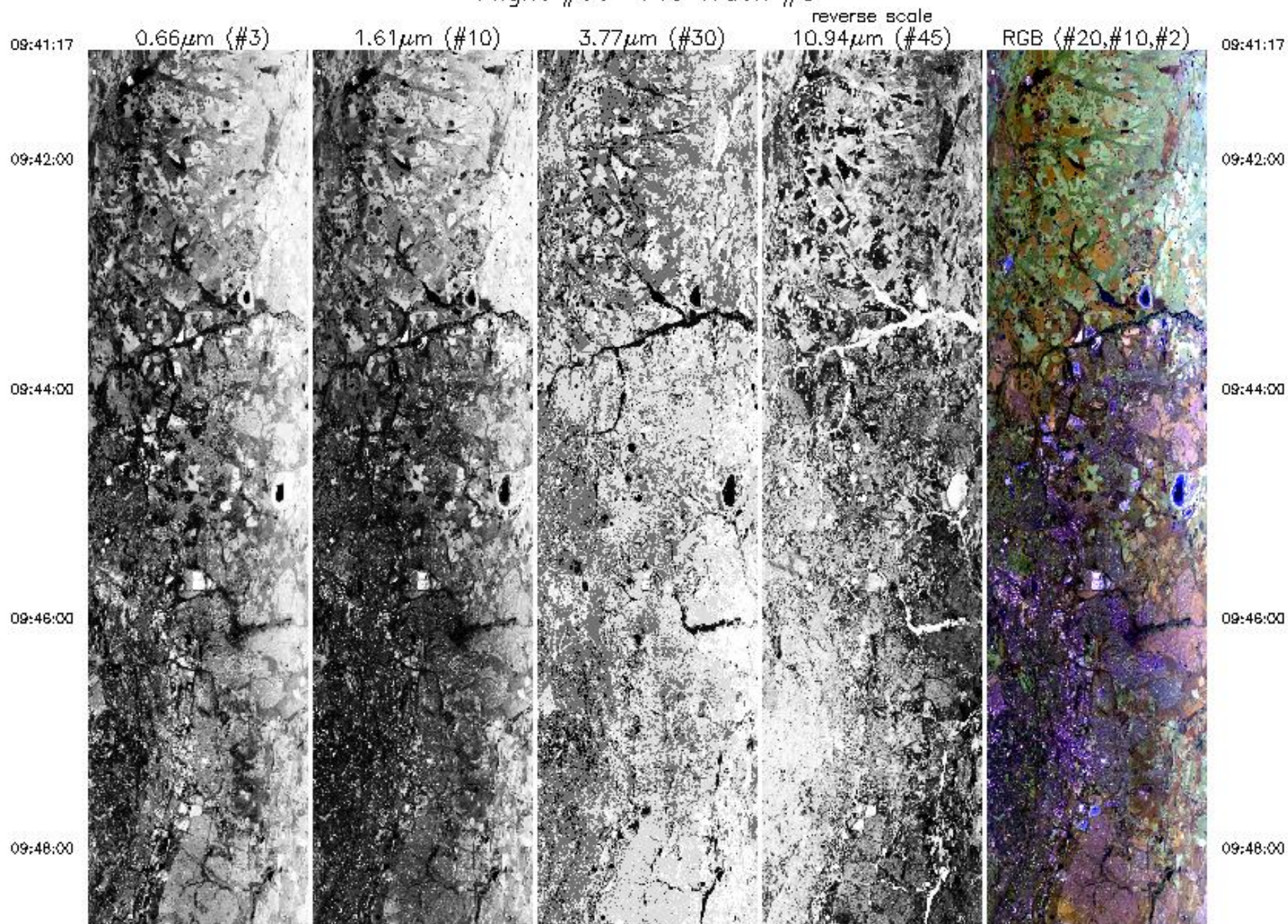
09:39:00

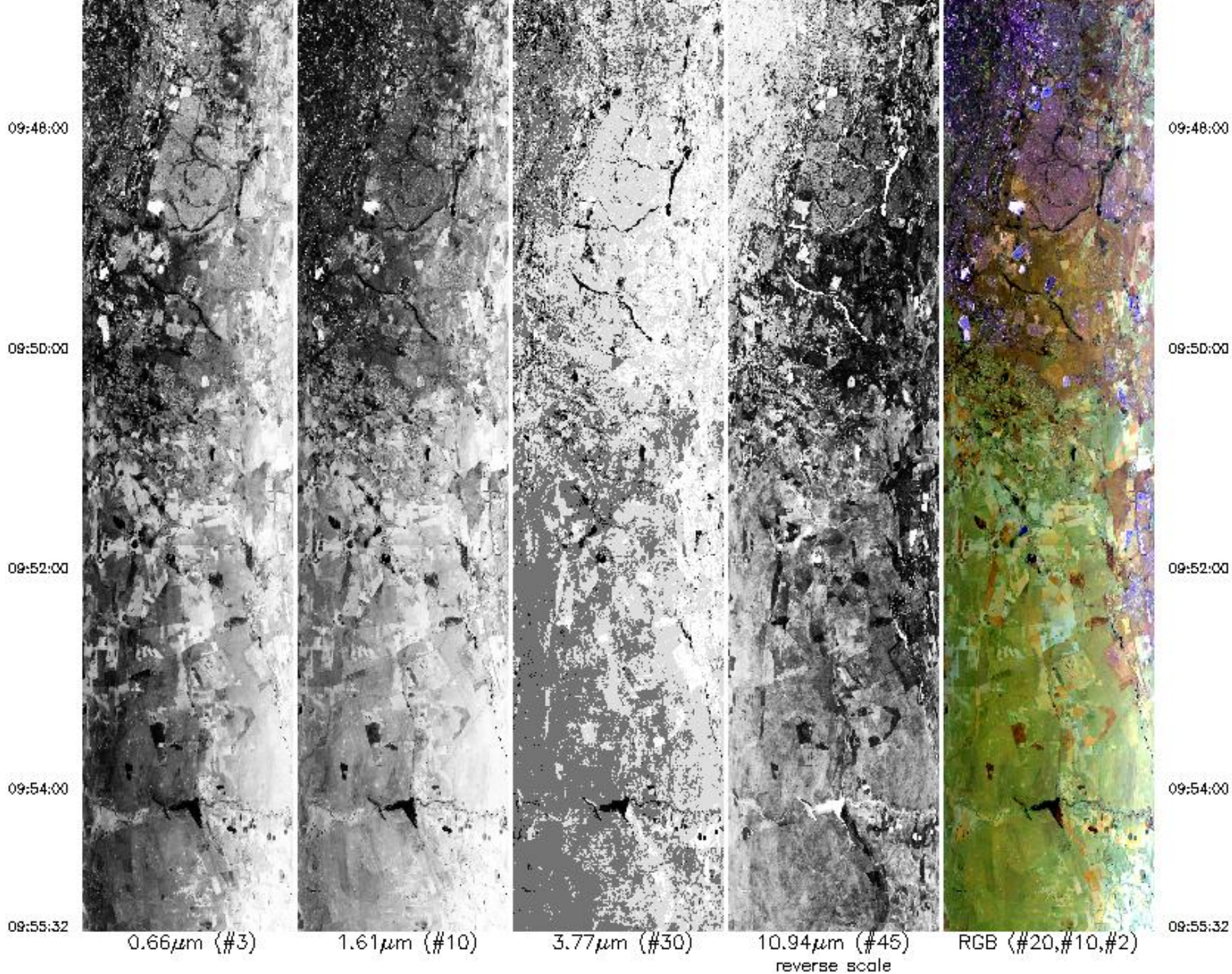
09:40:44

Aircraft Heading = 254.2°
 Solar Zenith = 52.4°
 GPS Altitude = 19979. m (MSL)

Aircraft Heading = 254.2°
Solar Zenith = 52.4°
GPS Altitude = 19979. m (MSL)

MODIS Airborne Simulator Browse Imagery
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Flight #00–149 Track #8





Aircraft Heading = 271.6°
Solar Zenith = 50.6°
GPS Altitude = 19973. m (MSL)

09:55:32 0.66 μ m (#3) 1.61 μ m (#10) 3.77 μ m (#30) 10.94 μ m (#45) reverse scale RGB (#20,#10,#2) 09:55:32

Aircraft Heading = 271.6°
Solar Zenith = 50.6°
GPS Altitude = 19973. m (MSL)

MODIS Airborne Simulator Browse Imagery
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Flight #00-149 Track #9

09:58:39 0.66 μ m (#3) 1.61 μ m (#10) 3.77 μ m (#30) 10.94 μ m (#45) reverse scale RGB (#20,#10,#2) 09:58:39

09:59:00

10:01:00

10:03:00

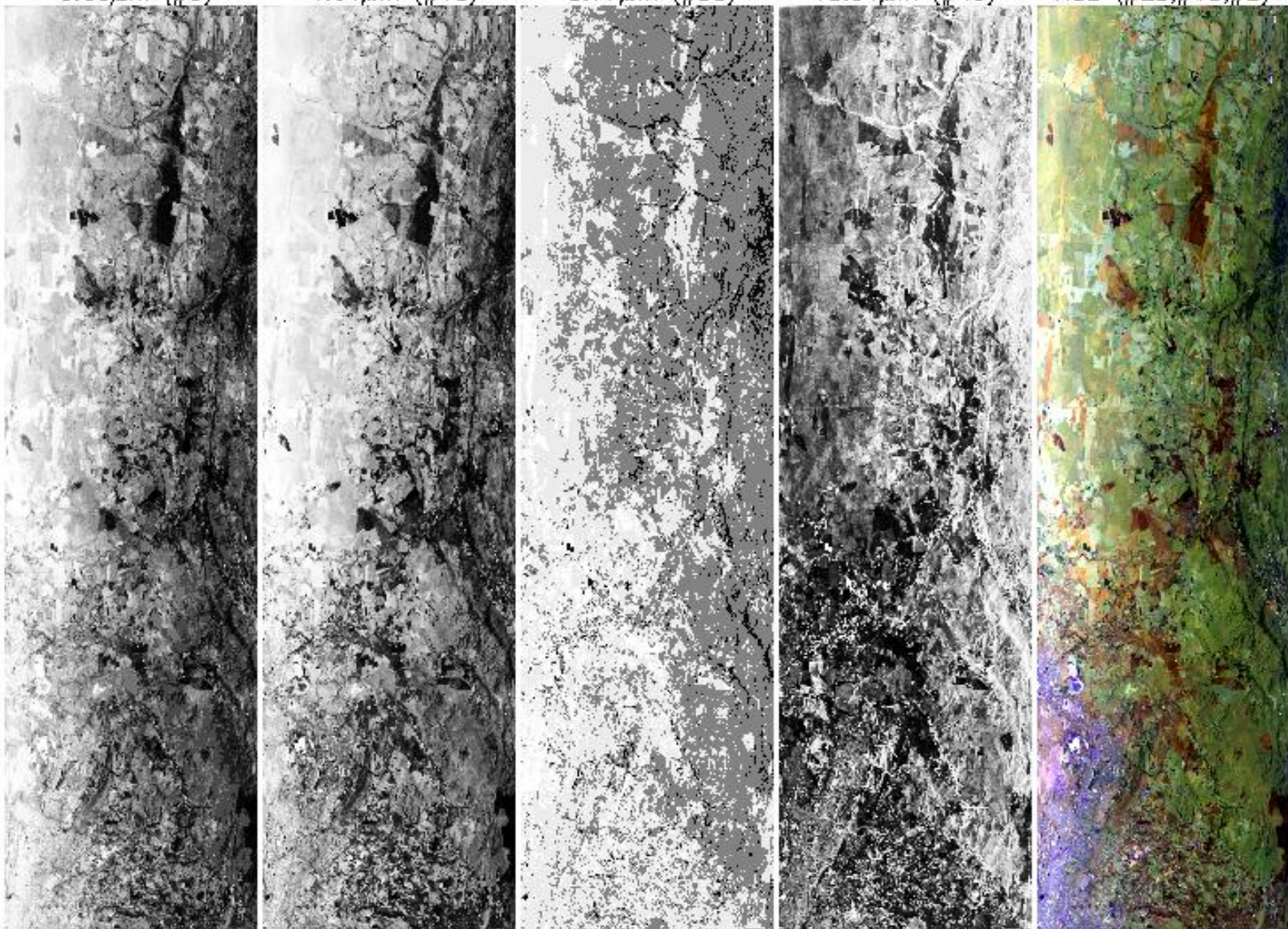
10:05:00

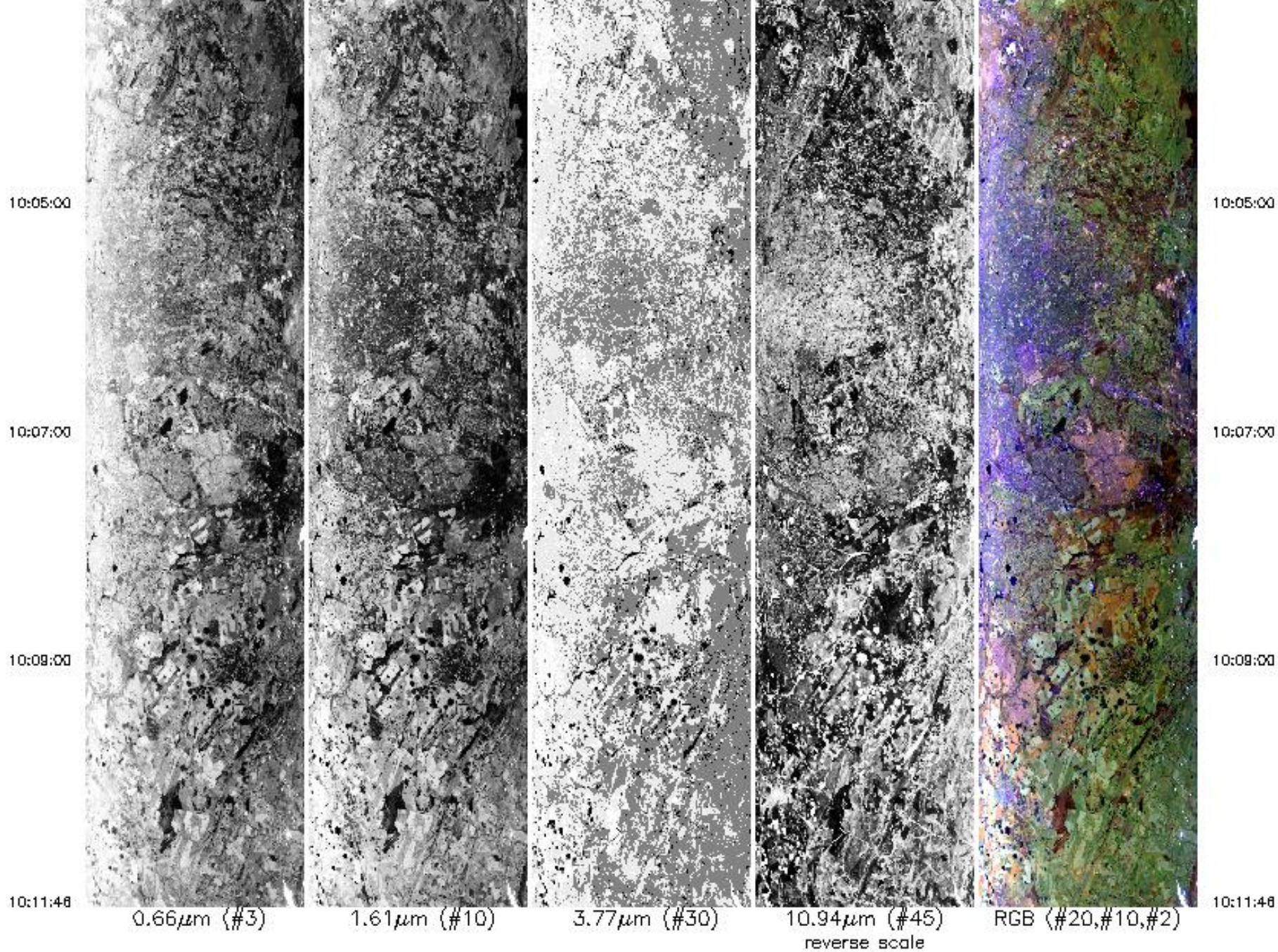
09:59:00

10:01:00

10:03:00

10:05:00

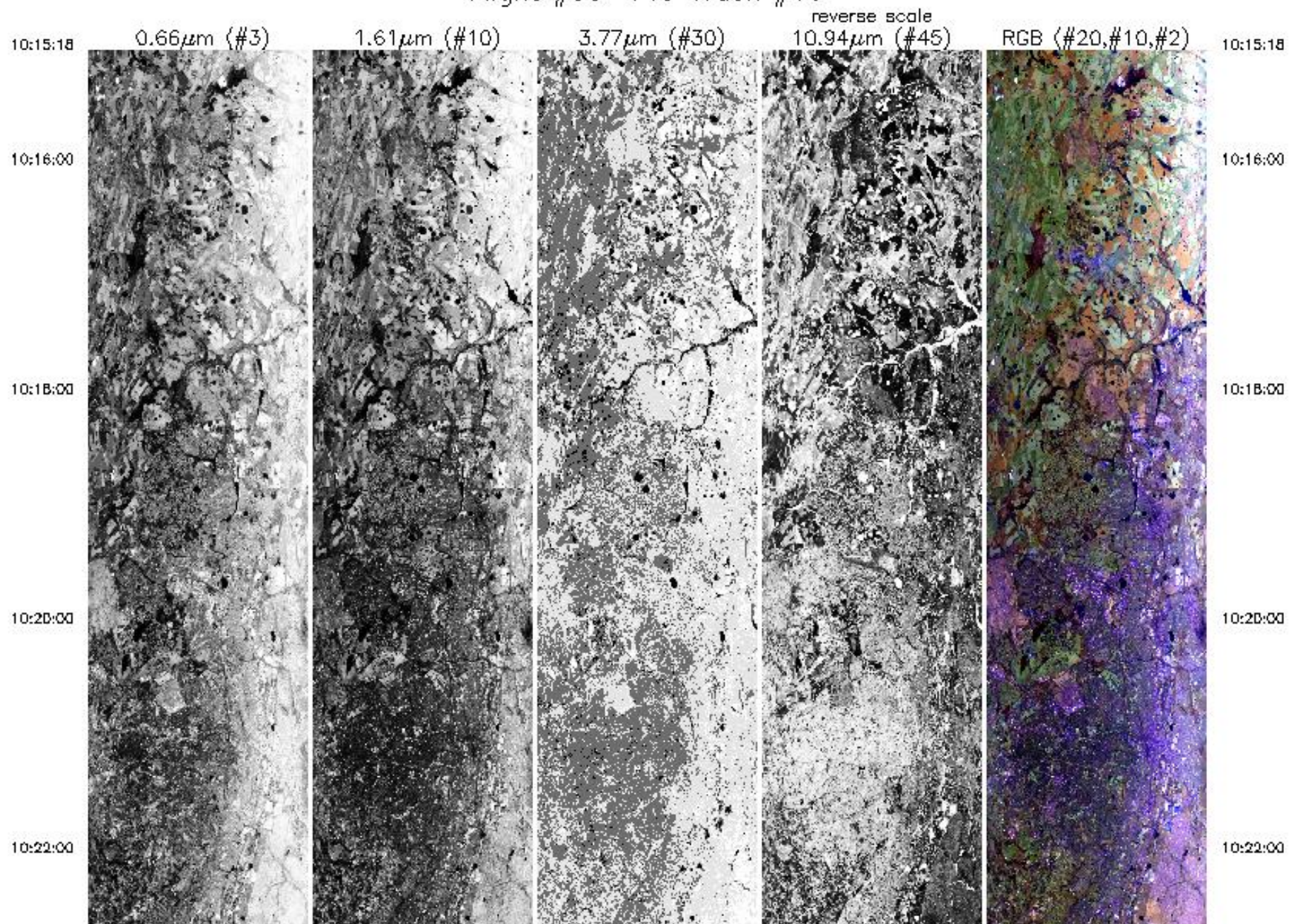


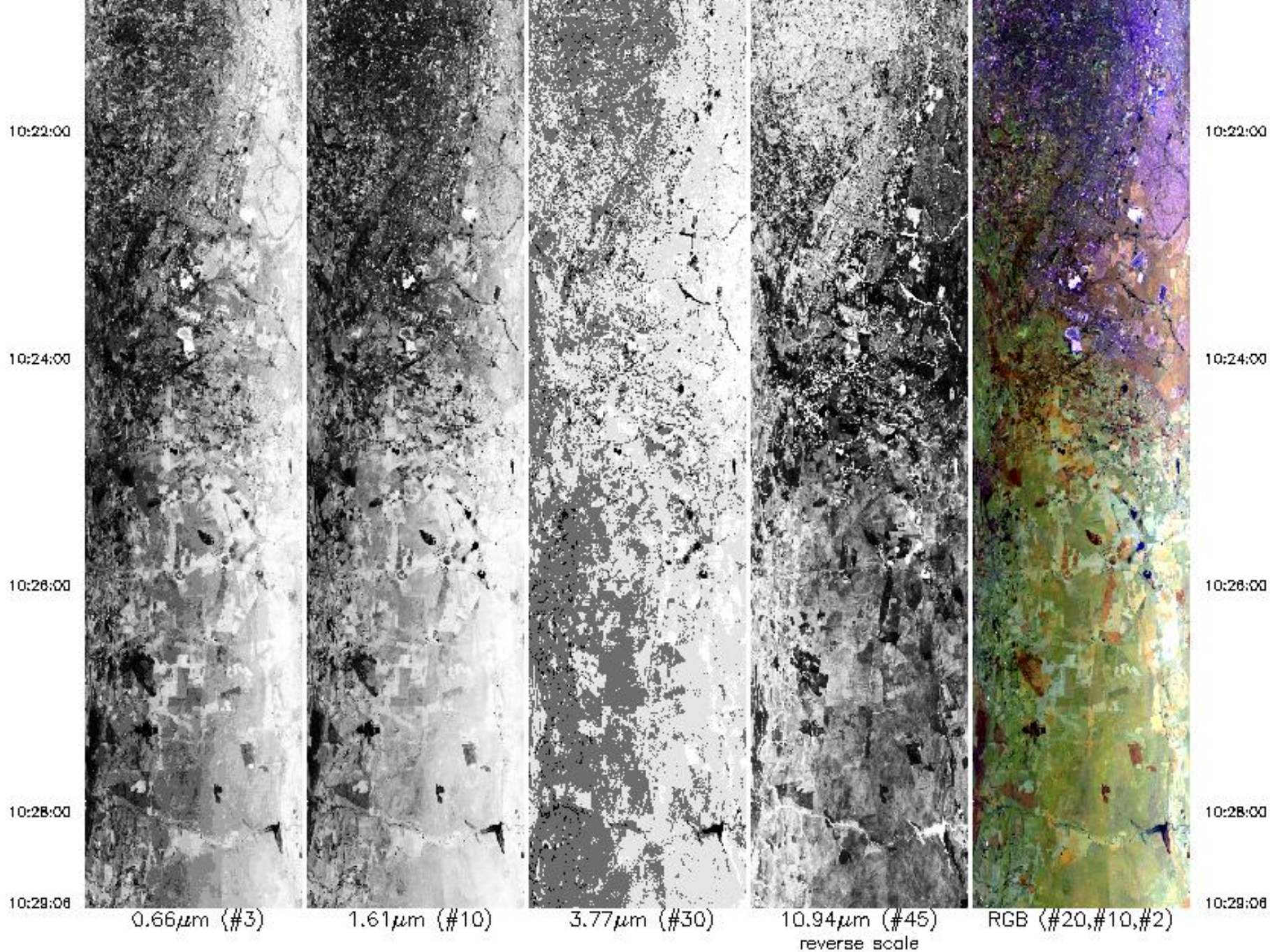


Aircraft Heading = 88.3°
 Solar Zenith = 47.9°
 GPS Altitude = 19996. m (MSL)

Aircraft Heading = 88.3°
Solar Zenith = 47.9°
GPS Altitude = 19996. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
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Flight #00-149 Track #10

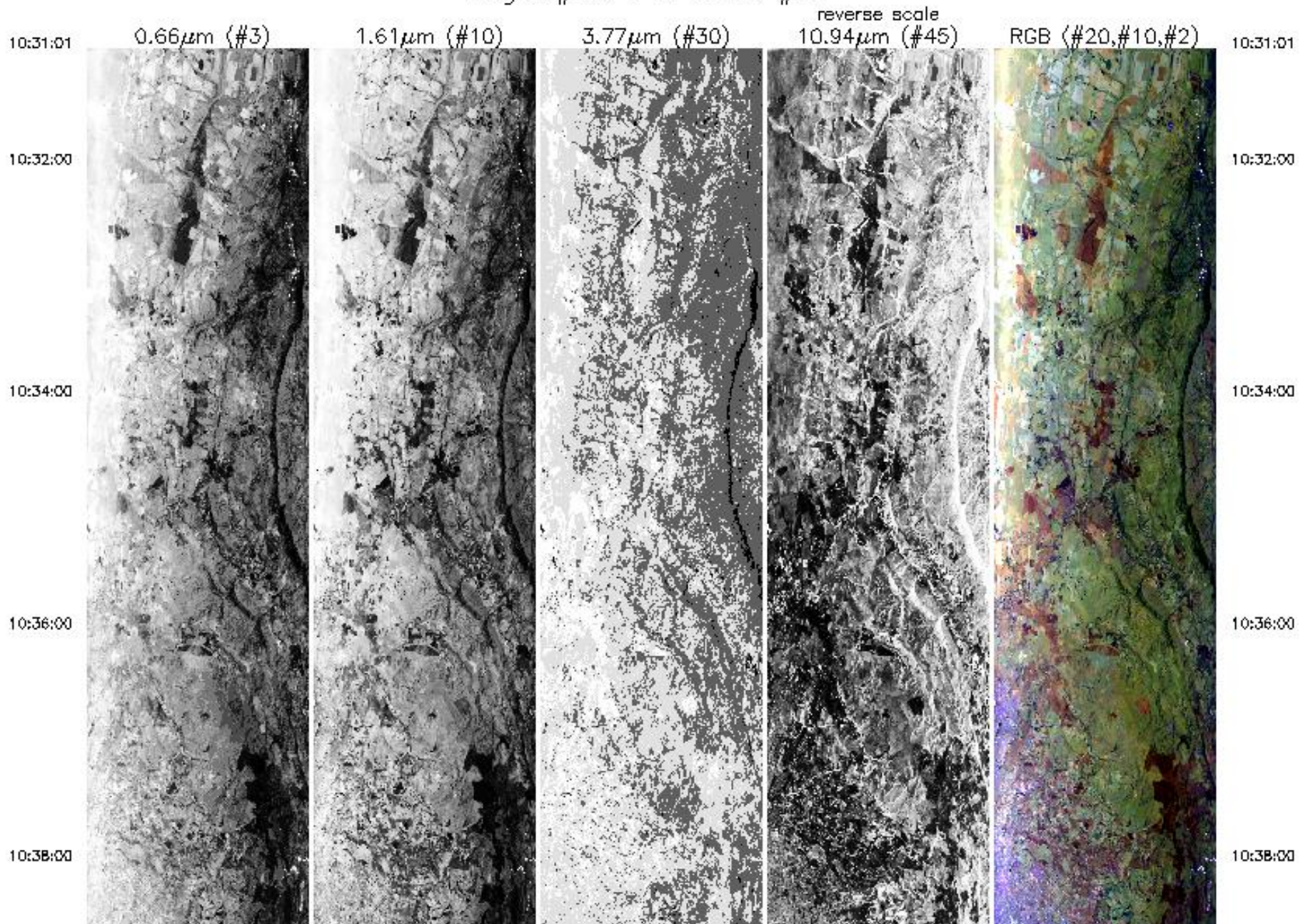




Aircraft Heading = 265.3°
 Solar Zenith = 45.4°
 GPS Altitude = 20006. m (MSL)

reverse scale
Aircraft Heading = 265.3°
Solar Zenith = 45.4°
GPS Altitude = 20006. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #11



10:38:00

10:40:00

10:42:00

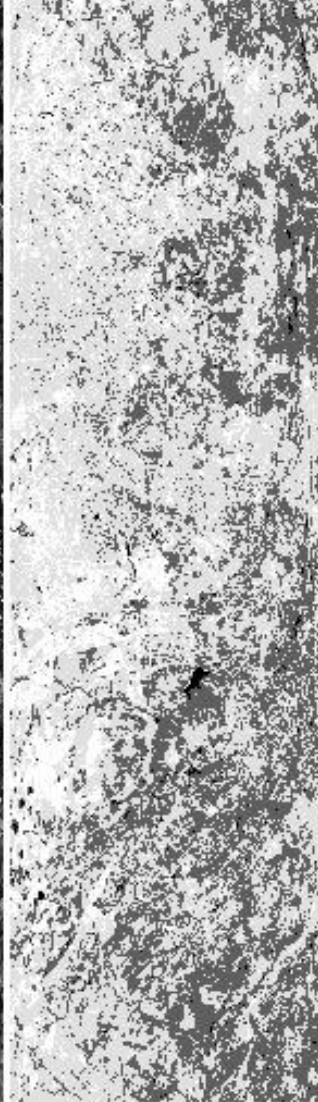
10:43:31



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)
reverse scale



RGB (#20,#10,#2)

10:38:00

10:40:00

10:42:00

10:43:31

Aircraft Heading = 84.4°

Solar Zenith = 43.5°

GPS Altitude = 20154. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign - 22 Aug 2000

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Flight #00-149 Track #12

10:47:22



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



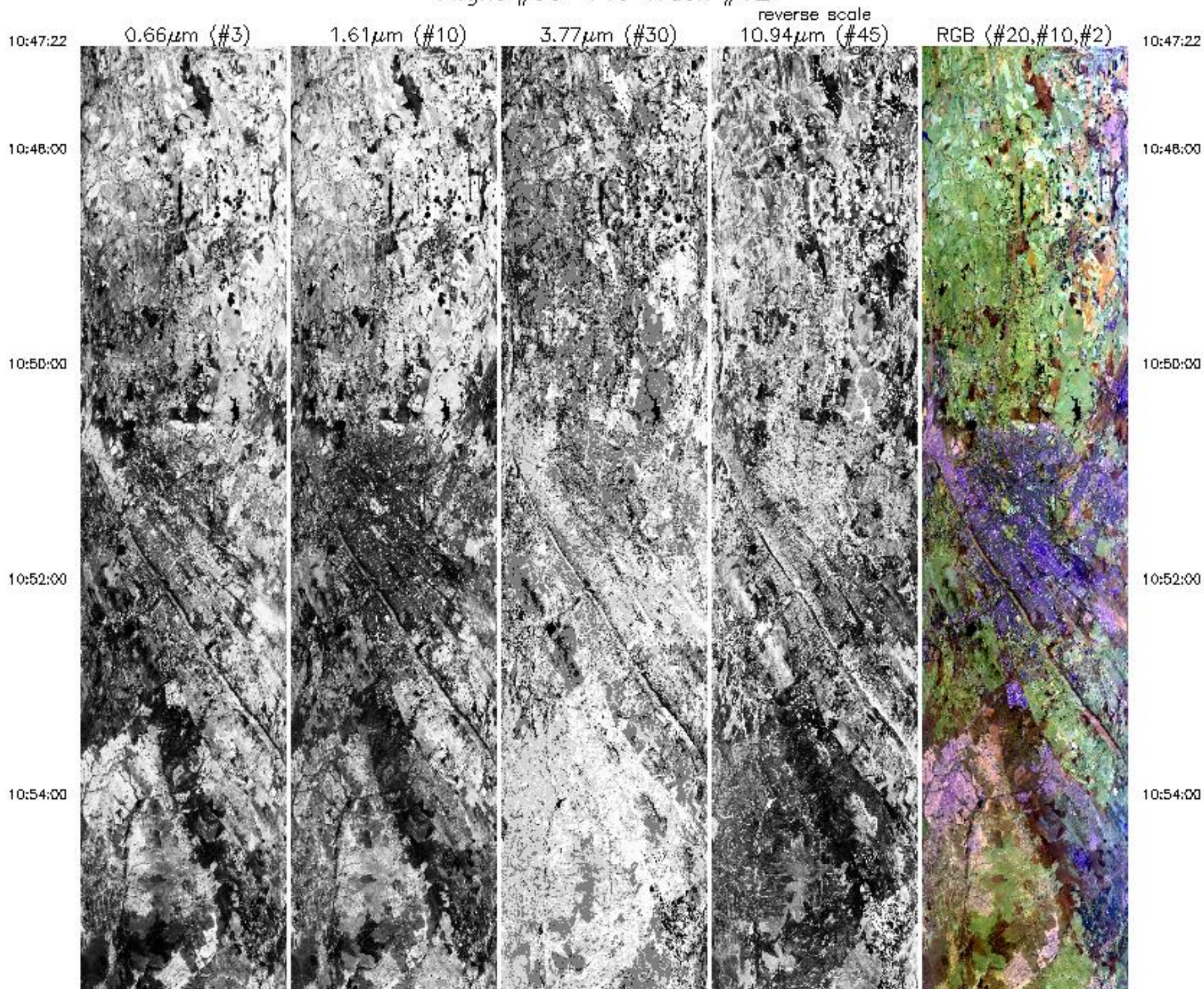
10.94µm (#45)
reverse scale

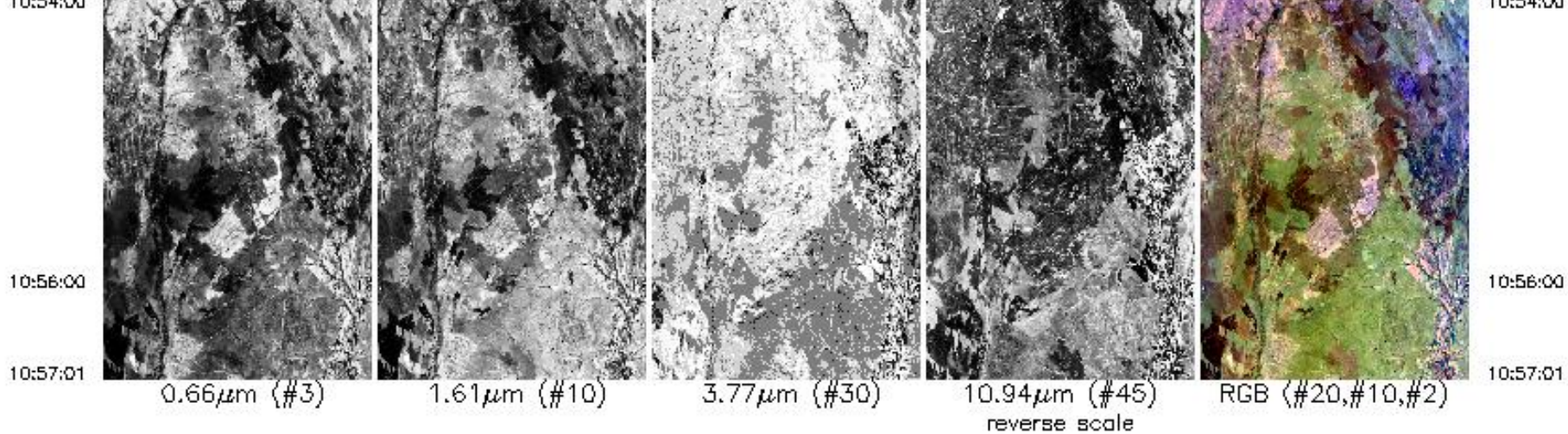


RGB (#20,#10,#2)

10:47:22

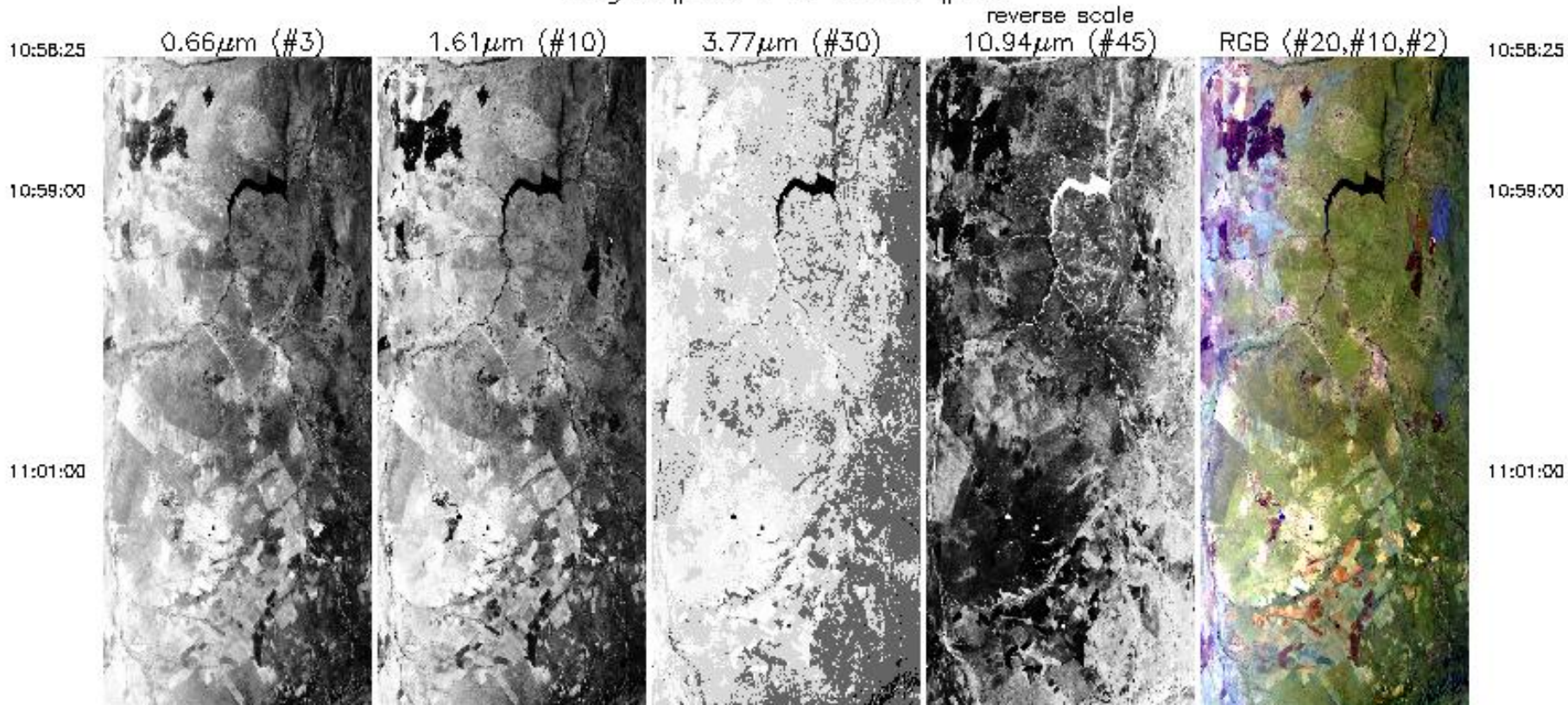
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign - 22 Aug 2000
South Africa
Flight #00-149 Track #12





Aircraft Heading = 308.4°
 Solar Zenith = 41.5°
 GPS Altitude = 19856. m (MSL)

MODIS Airborne Simulator Browse Imagery
 SAFARI 2000 Campaign – 22 Aug 2000
 South Africa
 Flight #00-149 Track #13



11:01:00



11:03:00



11:05:00



11:07:00



11:09:00



11:01:00

11:03:00

11:05:00

11:07:00

11:09:00

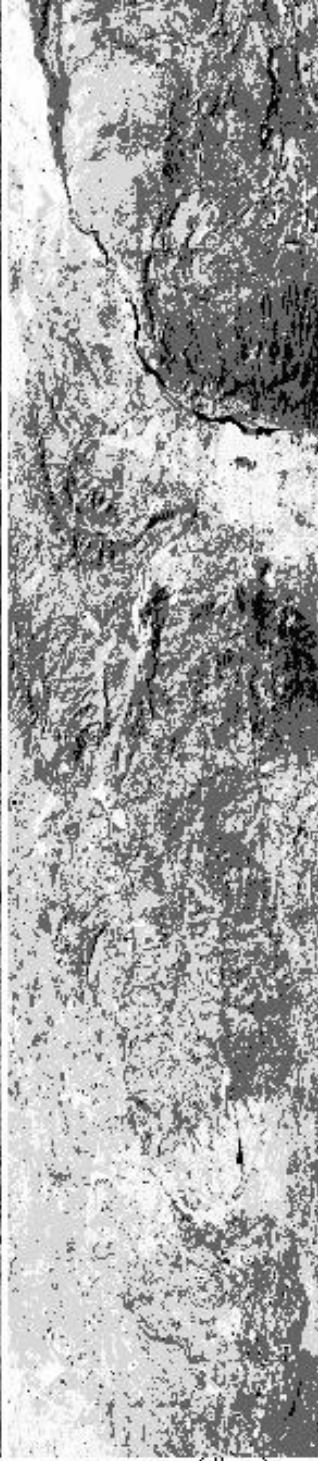
11:11:00

11:13:00

11:15:00

11:17:00

11:18:24



11:11:00

11:13:00

11:15:00

11:17:00

11:18:24

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)
reverse scale

RGB (#20,#10,#2)

Aircraft Heading = 54.9°

Solar Zenith = 39.9°

11:18:24



0.66 μm (#3)



1.61 μm (#10)



3.77 μm (#30)



10.94 μm (#45)
reverse scale



RGB (#20,#10,#2)

11:18:24

Aircraft Heading = 54.9°
Solar Zenith = 39.9°
GPS Altitude = 19951. m (MSL)